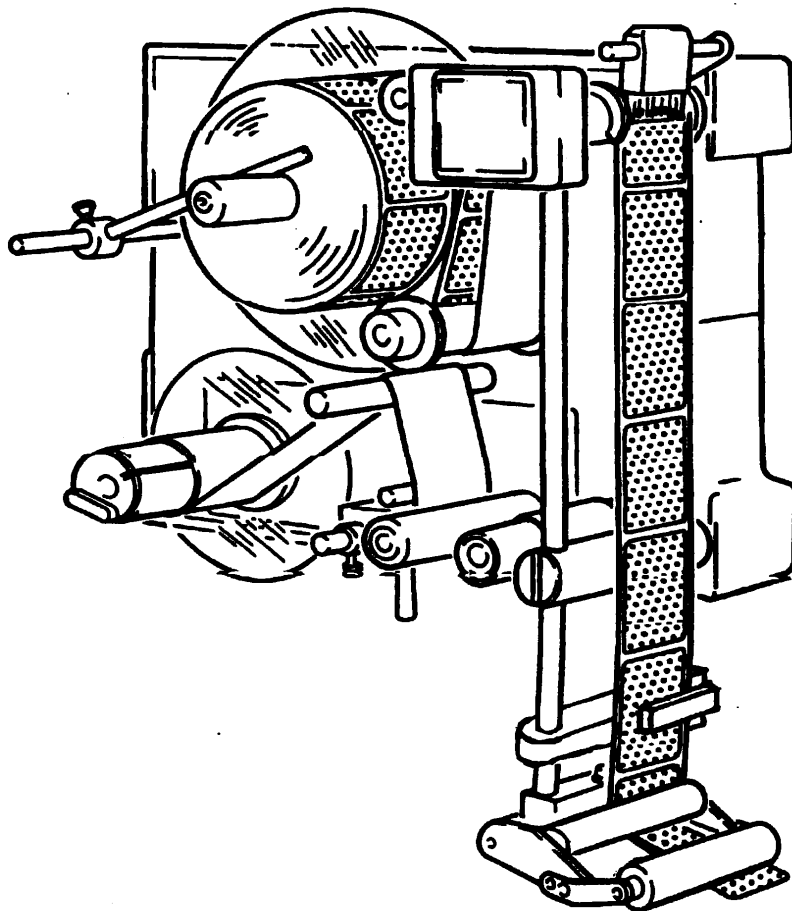


ALS 330/430

User Manual



...Covering the World

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1. Important Notes

1.1 Overview

The ALS 330 and 430 are fully automatic labeller. Handling is very easy and can be learned with a minimum of training. For operation, only a few adjustments are necessary. The machine is controlled by a microprocessor and because of its programmable functions, it can be used in many applications.

Except of cleaning the rollers and the label sensor there is no periodical maintenance necessary. This manual should help you to operate the machine. In chapter 3 the machine is described and many expressions are explained. For normal operating chapters 4 and 5 are important. All other chapters give additional details of the machine.



Note: This manual applies to ALS 330 and 430 machines, which are equipped with a software version from 4.0 onwards.

For technical questions, particularly in case of problems, your local service organisation will be pleased to help you.

1.1.1 Manufacturer

This machine was built by:

AVERY Maschinen GmbH

Ohmstraße 3

85386 Eching

Germany

Tel. +49-08165-925-0

FAX +49-08165-3143

1.1.2 Copyright

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1.2 Safety

1.2.1 General Safety Notes

In order to avoid any risk of injury due to squeezing between the fixed dispensing edge and the passing product, it may be necessary to add a protection cover in front of the dispensing edge. The necessity for this has to be decided on case by case. See also regulation EN 292 and 294.

1.2.2 Warning Notes in the Text

In this description, two types of notes can be found:

- *Warning note* – indicates a possible risk of injury for the user. Ignoring the warning can lead to injuries or material damages.

Example:



CAUTION! - The machine is connected to mains. Only authorised personnel may open the cover. Operation without this cover is not allowed.

- *Special advice* regarding the carrying out – please notice!

Example:



Note: Please take note of the given notes and advices. They serve your safety as well as the preservation of value of the machine.

1.2.3 Operator's duty of care

The machine was designed and constructed taking into account a hazard analysis and after careful selection of the harmonised standards to be observed, as well as other technical specifications. Thus, it corresponds to the state of the art and allows the highest possible degree of safety during operation.

The safety of the machine, however, can only be put into operating practice if all measures required for the safety are taken. It falls within the operator's duty of care to plan these measures and to verify their implementation.

Above all, the operator must make sure that

- the machine is only used in accordance with its purpose (cf. the section "Use in accordance with the purpose" in the chapter "Specification")
- the machine is only operated in faultless serviceable condition and that especially the safety devices are regularly checked with respect to their serviceability
- the required personal protective clothing and equipment for operating, maintenance and repair personnel are available and are being used
- a legible and complete copy of the operating instructions is always available at the place of operation of the machine
- only personnel which is qualified and authorised for it will operate, service, and repair the machine
- this personnel is instructed in all relevant issues of occupational safety and environmental protection on a regular basis and is familiar with the operating instructions and especially the safety instructions contained therein
- all safety and warning instructions on the machine itself are not removed and are legible

**Industrial Safety
Legislation**



**Safety
Regulations
of the
Trade
Associations**

Operator manu:



1.2.4 Concrete security regulations and symbols used

In the following operating instructions, concrete security regulations are indicated in order to point out the remaining risks which cannot be avoided when operating the machine. These remaining risks include danger to

- Persons
- Product and machine
- Environment

The symbols used in the operating instructions are above all intended to point out the security regulations!



This symbol indicates that especially danger to persons has to be expected.

(Lethal danger, danger of injury)



This symbol indicates that especially danger to the machine, material, and the environment has to be expected.

The most important aim of the security regulations is to avoid injuries to a person.

- Whenever there is a warning triangle with the caption “**Danger**” in front of a security regulation, dangers to the machine, materials, and the environment are not excluded.
- Whenever there is a warning triangle with the caption “**Warning**” in front of a security regulation, a danger to persons, however, must not be expected.

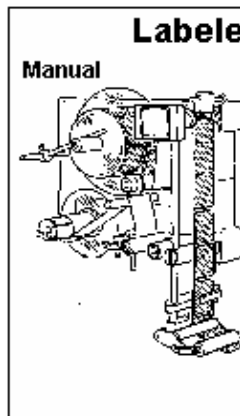
The symbol used in each case, however, cannot replace the text of the security instruction. Thus, it is necessary to always read the text completely!



This symbol does not indicate security regulations, but provides information for a better understanding of the machine’s operations.

1.2.5 Security measures during normal operation

The machine may only be operated by trained and authorised persons who are familiar with the operating instructions and are able to work in accordance with it!



- Before starting the machine, check and make sure that only authorised personnel is staying in the operating area of the machine
- Nobody can get hurt when the machine is started!
- Before every production start-up, the machine must be checked for visible damage and it must be made sure that it is only operated in faultless working condition! Any defects found must be immediately reported to the supervisor!

Before every production start-up, all materials/objects that are not necessary for production must be removed from the operating area of the machine!

Before every production start-up, it must be checked and made sure that all safety devices function in a correct manner!

1.2.6 Security measures during maintenance and repairs

Inspection and maintenance periods laid down in the operating instructions must be observed!

Observe maintenance and repair instructions in these operating instructions, which refer to individual components!



Before performing maintenance and repair work, the access to the operating area of the machine must be prohibited for unauthorised personnel! Post or put up a sign, which indicates the maintenance, or repair work!



Before performing maintenance and repair work, turn off the main switch for the electric power supply and secure it with a padlock!. The key to this padlock must be in the hands of the person who performs the maintenance or repair work!

When exchanging heavy machine parts, use only suitable and faultless load suspension devices and stopping devices!

1.2.7 Work on the electrical equipment



Repair work on the electrical equipment of the machine may only be performed by a trained electrician!
Electrical equipment must be checked on a regular basis!
Loose connections must be fixed again!
Exchange damaged lines/cables immediately!
Always keep the switch cabinet closed! Access is only allowed to authorised personnel with keys/tools!
Never wash down switch cabinets and other housings of electrical equipment with a water hose for cleaning!

1.2.8 Work on pneumatic equipment



Maintenance and repair work on pneumatic equipment may only be performed by specially trained personnel!
Before starting maintenance and repair work, depressurise the pneumatic equipment of the machine!
By way of precautionary maintenance, exchange hose pipes on a regular basis, even if there is no damage to be detected!
(Observe the manufacturers' instructions!)
Before setting into operation after maintenance or repair works

- check if loosened screwed connections are tight
- make sure that removed coverings are re-installed

After termination of maintenance and repair work and before re-starting the production, make sure that

- all materials, tools, and other equipment required for maintenance and repair work are removed from the operating area of the plant
- all safety devices of the plant function in a faultless manner!

1.2.9 Observe environmental regulations



During any and all work on and with the machine, the statutory duties concerning prevention of waste and the proper waste disposal/recycling regulations must be observed.
Especially in the case of installation, repair and maintenance work, substances which are hazardous for the water, such as detergents containing dissolvents, may not pollute the soil or get into the sewage system!
These substances must be stored, transported, collected, and disposed of in appropriate containers!

2. Description



CAUTION! - The machine is connected to mains. Only authorised personnel may open the cover. Operation without this cover is not allowed.

This chapter explains the structure and the function of the labeller. The expressions used are explained here.

2.1 Mechanics

The labeller is available in a right-hand or a left-hand version. The expression right or left is related to the direction of product transport.

The material is unwound from the label roll (3). The maximum diameter of the label roll is 300 mm. The width of the backing paper is 155mm for a 330 and 230mm for a 430 machine. The label roll is guided by a swing away lever (4).

The dancer arm (011) keeps the material tight and the acceleration forces low. The deviator roller (8) allows the use of inside or outside wound label web. The deviator roller (9) guides the material to the dispensing edge. Paper brake brush (6) applies a brake force to the label web and keeps the label web under a certain tension without disturbing the movement. At the dispensing edge (10) the label sensor (15) is mounted. It detects the gap between the labels. The sensor includes a light source and a light receiver. The software can adjust the sensitivity. With this information, the machine calculates the position of the label. At the dispensing edge (10) the label is separated from the backing paper and moved to the product. With a foam roller (16) in front of the dispensing edge, the label is applied to the product.

The deviator rolls (5) guides the backing material to the drive roller (1).

The drive roller (1) moves the label web according to the adjusted dispensing speed.

The pressure roll (12) has to be positioned in the centre of the label web, in order to guide the web straight on track. By means of the knurled screws, the pressure roller is held in its required lateral position on the shaft.

With its handle the pressure roller (12) will be opened and closed. When inserting the material the pressure roller has to be opened.

The deviator roller (17) guides the backing paper to the rewind mandrel (13). The rewind mandrel should always be set to expanded position when mounting a new roll of labels. This allows an easy removal of the collected backing material.

To ensure a reliable run of the label web the guides (18) have to be adjusted according to the width of the labels in use.

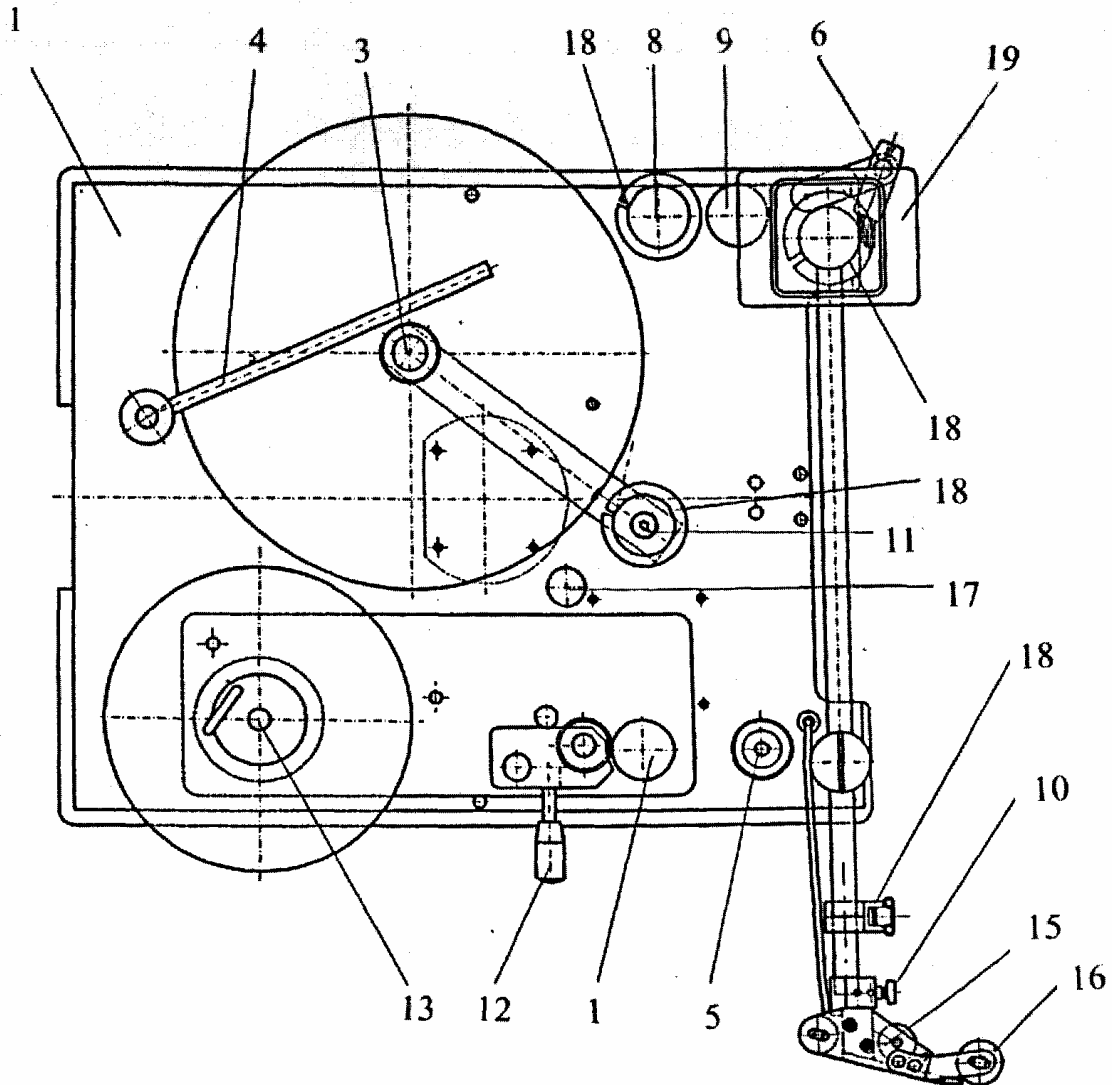


Figure 1 Machine layout

Apart from the drive roller (1), and the material brush (6) the labeller has no mechanical wearing parts.

The operator panel (19) is described in the next section of this chapter.

2.2 Operator panel

The operator panel (Figure 2) of the 330/430 is shown below, it has a 4 digit LED display and 4 membrane keys.



Figure 2 Operator panel

The 4 membrane keys have following functions:



FEED: By pressing this key one label will be dispensed. When the machine displays INIT pressing this key will start initialisation of the machine. An initialisation has to be made each time a new material is used. If the FEED key is pressed and held as the machine is turned on then the machine carries out an automatic initialisation of the label parameters "CONT" and "LPIT".



PRIOR: This key moves up the menu or increases the value of a (Prior function) parameter. If the up arrow key is pressed and held as the machine is turned on the product menu is selected.



NEXT: This key moves down the menu or decreases the value of a (Next function) parameter. If the down arrow key is pressed and held as the machine is turned on the standard menu is selected.



ENTER: This key is used to enter or exit a menu point or to cancel a warning or error message.

When the keys have different meanings, it will be explained in the relevant menu description.

2.3 Plug board

The plug board is shown in Figure 3. Beside the mains switch and the mains cable socket there are some more holes for optional functions. Standard execution in this machine is one I/O plug prepared for the product sensor. The connection of the other plugs is described in chapter Connections.

If you use the optional connections, it is strongly recommended to do this by means of the optional available SUB-D connectors. This ensures best EMI stability of the machine.

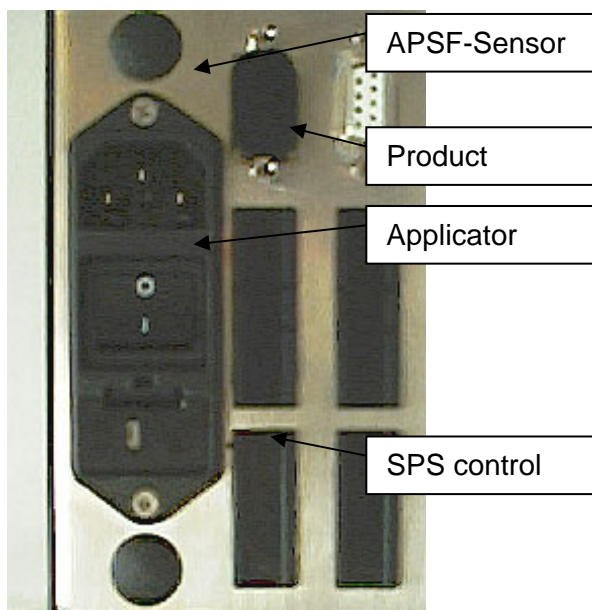


Figure 3 Plug board

The fuse holder setting you have to select according to your local main voltage (100, 120, 220 or 240 V). You carry this out by taking off the fuse holder and position the fuse holder insert accordingly.

2.4 Electronics

As standard the complete electronic is integrated in the machine. For special requirements (water protection e.g.) a machine version the electronic is housed in a separate cabinet is available.

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3. Preparing the machine

In this chapter you will learn how to install and adjust the labeller. After this step has been completed you will be ready to learn how the labeller's parameters can be adjusted to suit your particular production requirements.

3.1 Installation

3.1.1 Unpacking of the unit

- For removing the unit off the box, don't hold the machine on the dispensing edge to prevent disadjustment off the machine.
- For mounting the machine, a complete system of holding tools is available. Ask your representative.
- Take care that the machine is safe and stable mounted.
- There are rotating parts on the machine. Do the necessary actions to prevent that anybody can be caught from these parts.

3.1.2 Connection of the machine

Before connecting the machine to the mains, check the correct setting of the line voltage. For the connection of sensor, applicators e.g. see the chapter connections. Fix all cables to prevent accidents and damaging of cables. Have also a look to the EMI chapter for proper machine operation.

For checking of correct operation of sensors, applicators use the check functions SCHK, I_CH and O_CH.

3.1.3 General setting

Normally the setting is done, but before operation check and note the general dispenser configuration: dispenser direction, machine type, applicator mode, and APSF function.

3.2 Prepare dispensing

3.2.1 Insert material

Insert your label material in the machine to follow the instructions in the chapter Operation / Threading.

3.2.2 Define label data

For correct dispenser operation, you have to tell the machine the length of the label and adjust the label sensor. Normally this is done automatically. For this follow the instructions in chapter Operation / Initialise material.

There are some reasons the automatic initialisation is not possible:

1. Using another than the standard optical label sensor
2. Label material with a low contrast ratio between label and backing paper
3. Labels with holes inside the label

In this case, you have to set one or both of the parameter manually.

Activate the **extended standard menu** to do the settings by:

- Pressing both keys NEXT and PRIOR simultaneously
Display: **CODE**
- Password **CODE** entering:
1 time pressing the key PRIOR FUNCTION
2 times pressing the key NEXT FUNCTION
3 times pressing the key ENTER
Display: **LPIT**
- Setting the label length
Enter the LPIT function by pressing ENTER. Measure the distance from one label edge to the edge of the next label. Enter the value in mm by using the function keys. Press ENTER to leave the function. See also the information below.
- Change the setting of the label sensor
If another label sensor than the Wenglor type will be used, call the CONT function and set the value to any manual value (e.g. M006.).
If the contrast ratio is low, follow the instructions to adjust manually contrast.
- To store the setting permanent leaves the menu with the QUIT function. If you power off the machine without quit all modification are lost.
- By pressing the key FEED one label can be dispensed if you are in the parameter selection.

Setting LPIT manually

To initialise labels with cut outs such as the one shown below - the "LPIT" parameter should be used to enter the label pitch of the label web.

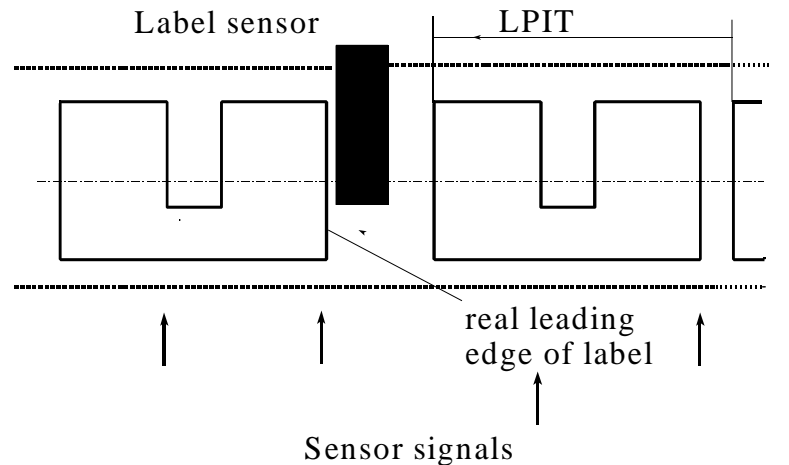


Figure 4 Definition of LPIT

All other label edges seen by the label sensor will be ignored until the distance adjusted in the "LPIT" parameter has been fed through the label sensor.

Manual adjustment of the CONT parameter

- Remove a label from the backing paper and slide it inside the sensor.
- Reduce the value with the PRIOR key until the LED switched on.
- Press the key NEXT until the LED switched off. If there are marks on the backing paper do the measurement on this position.
- Note the value GAP xxx
- Slide the backing paper including label inside the sensor. Use the lightest position on the label for the adjustment.
- Increase with the NEXT key the value until LED lights again. Note the second value GAP yyy
- Calculate the contrast value by the formula $(xxx + yyy) / 2$ and set it.
- Manual adjustment is completed.

With a difference of less than 20 an operation with this kind of sensor is not possible (sometimes two or more labels are dispensed).

3.2.3 Capacitive label sensor

For transparent labels the standard photo label sensor doesn't work. In this case, use a mechanic or a capacitive label sensor.



Note: For correct automatic initialisation, the CONT parameter has to be set to a manual value, if you using not the standard photo sensor.

A mechanical sensor is limited in the speed. The bounce at the label edges produces wrong signals.

There is optional a capacitive label sensor available (Leuze GK14/24L).

Adjustment of the sensor is carried out as follows (Figure 5):

1. Set sensitivity to maximum by turning the Potentiometer clockwise. Then rotate $\frac{1}{2}$ turn anticlockwise.
2. Remove label material out of sensor.
3. Perform base adjustment, that both LED "base adjustment" have the same brightness.
4. Put label with backing paper inside the sensor. Doing this, the LED "switch output" and the left LED "base adjustment" are switched off. With backing paper only in the sensor both LED are switched on. If the LED are lightning with label inside the sensor, increase sensitivity in $\frac{1}{4}$ turn steps by rotating the sensitivity clockwise.
5. Check the adjustment over the complete length of label.

Carry out the above adjustment after mounting, cleaning or increasing sensitivity.

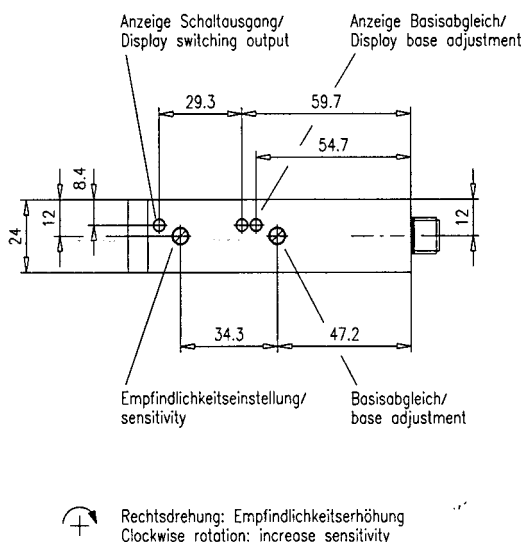


Figure 5 Capacitive sensor

3.3 Label guide

On some of the axles, they're guiding clamps. Adjust the clamps near the machine so all have the same distance to the front plate (31.5mm). The outer clamps should be mounted that the guide but not bend the label material.

The front of the V-dispensing edge has a rot, which can be adjusted for straighten the material guiding. Spend several labels by pressing the dispenser FEED key. If the material guiding is running out of the guiding way, adjust the rot by loosening two screws at the dispensing edge. With a L-dispensing the adjustment is done by moving the tail sheaves behind the dispensing edge.

3.4 Adjust dispense function

For an operation without any trouble and high label accuracy, three adjustments are required:

- Label position on the dispensing edge: stop position
- Dispense speed
- Label position on the product

The adjustment should be done in the same order, because parameter like the stop position depends on the setting of the stop position and the dispensing speed.

3.4.1 Stop position

The first step is to adjust the stop position. This is the basic adjustment of the dispense process. Also in case of problems with the machine check if the stop position is okay.



Figure 6 Stop position

The stop position should be adjusted so that the label stops at the dispensing edge up to 3 mm behind.

For a correct operation of the automatic label compensation, they will compensate a missing label on the web, first the distance between label sensor and dispensing edge has to be defined. Do this by calling the DIST function in the configuration menu. Check the setting by removing a label before the label sensor from the web. Give a start signal to the machine by triggering the start sensor (not the FEED key) and see if the compensation is done on the right position. Do the fine adjustment with the STOD function.

3.4.2 Fixed dispensing speed

The second step is to adjust the dispense speed. If an APSF sensor is used see 3.4.3. If an applicator is used, then the dispense speed has no influence to the dispense process. Continue with 3.4.4.

Set POS to the distance between start sensor and dispensing edge. If installed remove the roller to press the label onto the product. Now try to dispenser one product. If the label has wrinkles reduce the speed VELO. If the product peels out the label, so the stop position of the next label is different to the last position increase the speed. Normally your dispense speed should be a little bit higher than your product speed.

3.4.3 Automatic dispensing speed (APSF)

With a connected rotary encoder, the dispensing speed follows the measured product speed. To adjust the speed use the EGRA function located in the extended standard menu. The measured speed will be displayed in the VELO function. Do the adjustment in the same way described for fixed speed.

3.4.4 Label position on the product

At least adjust the position of the label on the product with the POS function or with the STAD function, if an applicator is in use.

3.4.5 Product data bank

Save your setting in one of the product data banks. If different products and / or labels are in use up to nine different combinations could be stored. Define and store the different product data. The select the product data bank mode by holding the PRIOR key during power on. Switch back to normal mode by holding the NEXT key.

4. Operation

This chapter describes the operation of the machine.

4.1 Safety recommendation



CAUTION!

- **Before connections to the mains check the correct voltage selection.**
- **Use only original spare parts for service.**
- **Open of the cover is only allowed authorised personal.**
- **Handling of the machine is permitted only trained personal.**
- **Be careful on operation, fingers, hair, clothes, jewellery, etc. may be caught by and get into rotating axles.**

4.2 Inserting label material

Attention:

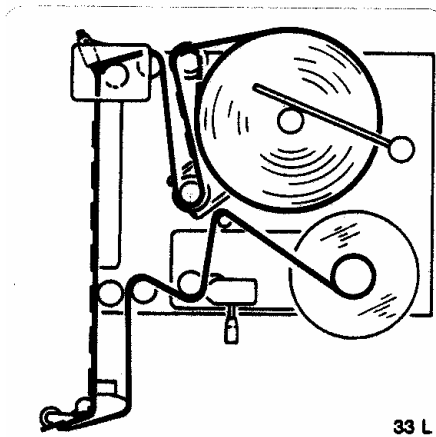
- Before threading the new material, the waste paper should be removed.



CAUTION! - Insertion/exchange of material should be carried out only by especially instructed personal.

Threading of the label material is shown down below on the threading diagrams for the right-hand and the left-hand version.

Left hand version



Right hand version

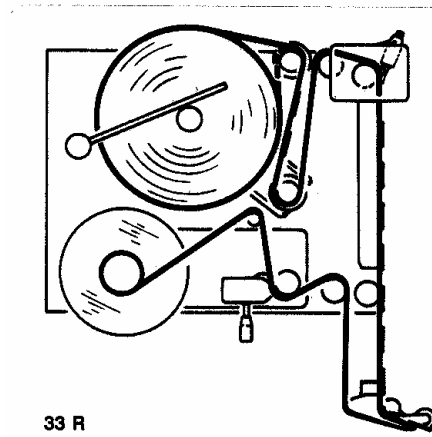


Figure 7 Threading diagram

4.2.1 Removing label material

Before you mount a new roll of labels, it is necessary to remove the accumulated roll of backing material. Turn the lever the expanding pads retract. The roll of backing material can easily be pulled off the rewind mandrel.

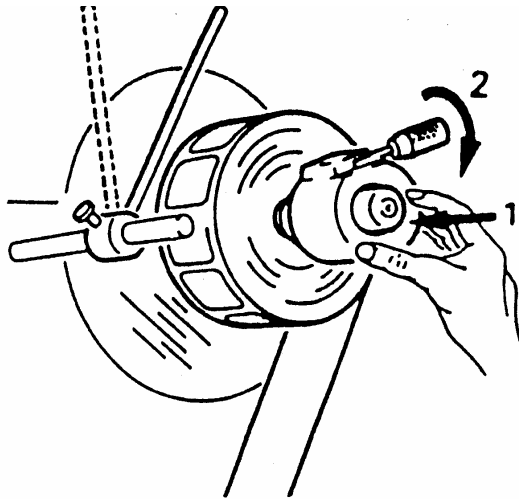


Figure 8 Remove label material

To ensure a reliable function of the unwind it is important to exchange the collected backing material each time you mount a new label roll.

4.2.2 Mounting a new label roll

Mounting of the new label roll depends on the used machine

Mounting a new label roll on ALS 330 Euro

Mount the new label roll to the unwind mandrel and secure the position by means of the unwind clamp. You achieve a reliable position of the unwind clamp by pressing it firmly against the label roll core, while you are moving the lever 2 to the locking position.

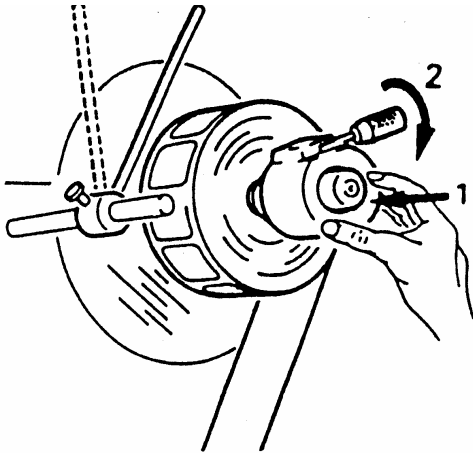


Figure 9 Unwind unit at ALS 330 Euro

Mounting a new label roll on ALS 430

By means of the knurled screw the collapsible key can be moved further in or out for clamping and releasing the label roll.

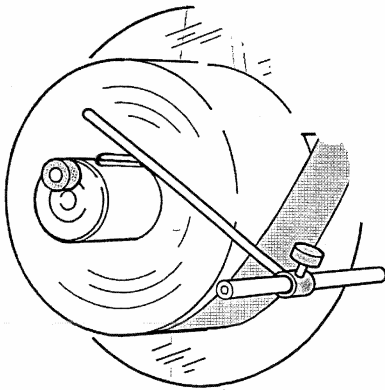


Figure 10 Unwind unit at ALS 430

The material brush has to be positioned in a way, that the material is kept tight. From time to time, it is recommended to reverse the mounting of the brush while you are loading a new label roll. Mount the label web through the label sensor. Remove the labels until about 50 cm of the backing material is exposed. Thread this backing material around the drive and deviator roller. Fold the end of the backing material back approximately 15 mm and insert the leading edge into the slot of the rewind mandrel. Turn the lever, the rewind expands, the slot is closed and

the backing material is clamped in the slot. Wind the mandrel a few times to take up any backing material slack between the deviator roller and the rewind mandrel.

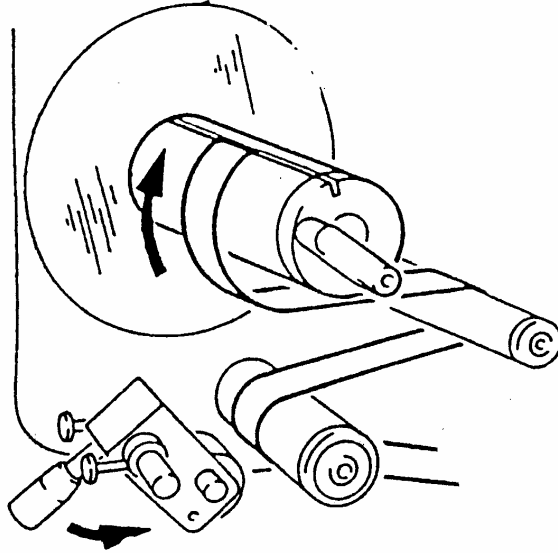


Figure 11 Rewind

4.2.3 Adjusting the pressure roller

The pressure roller should always be positioned over the middle of the backing material. This ensures accurate label placement. Turn the pressure roller away from the drive roller. Loosen both knurled screws. Move the entire unit to its correct position. Fasten the screws securely again.

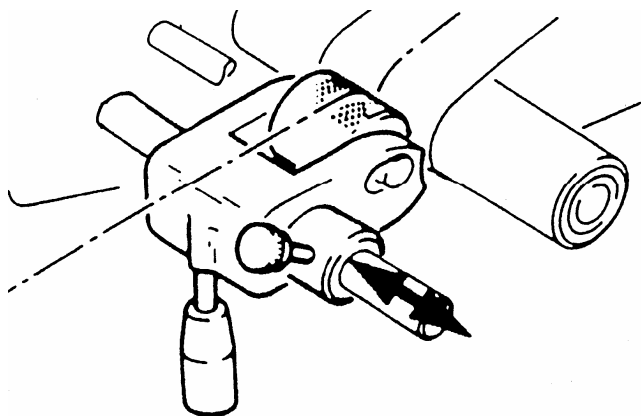


Figure 12 Pressure roller

4.2.4 Lead screw adjustment

For adjustments of the dispensing edge towards or away from the conveyor, the lead screw integrated in the labelling head should be used. Positions can be read from the scale on the dispensing edge bars.

4.2.5 Adjustment of the dispensing edge

Loosen handle 1 and 2 and turn lead screw Z. Once the adjustment is completed pull the handles tight again.

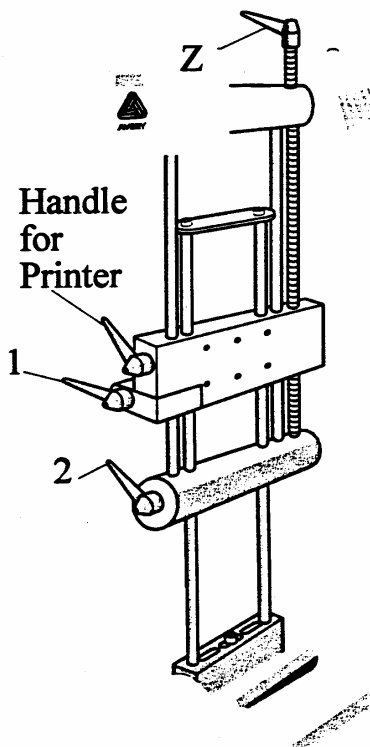


Figure 13 Dispensing edge

4.2.6 Printer adjustment

If your labeller is equipped with a printer, you adjust the print position as well with the lead screw Z. In this case loosen handle (orange) for printer and handle 1. Once the adjustment is completed, pull the handles tight again.

4.2.7 Adjust pressure roller

Depending on the application the foam roller has to be adjusted. Loose the both screws and tighten the screws again after the adjustment was done.

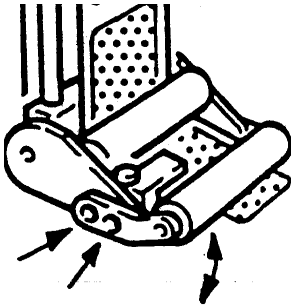


Figure 14 Adjust pressure roller

4.3 Initializing new label material

The machine requires data of the label material in use i.e. label length and opacity of the label and backing material. In most cases, those parameters can be scanned during automatic initialisation. This is not always possible.

During initialisation, the machine uses its label sensor to determine where the labels are on the label web and the distance between the leading edge of labels (the label pitch) so that they can be positioned correctly.

There are several modes of initialisation:

- Automatic mode: The machine measure the setting
- Manual mode: The operator measures the label parameter and keys in the values.

In most cases, initialisation should be executed in fully automatic mode. For fully automatic initialisation, the "LPIT" and "CONT" parameters should be set to "AUTO". Initialisation can be executed by pressing the <FEED key> whenever the message "INIT" is displayed by the machine.

The message "INIT" is displayed in the following cases:

- a) if the <FEED> key is pressed and held during power up
- b) on return to the standard menu after the "CONT" or "LPIT" parameters have been changed to automatic mode
- c) on return to the standard menu after the configuration menu has been used
- d) after clearing the error messages E__0 or E__1 in the standard menu. (If the feed key is pressed while another parameter is displayed, the data from the last initialisation is held and the first label edge detected is simply moved to the position defined by the "STOD" parameter)

To start initialisations simply press the <FEED> key when "INIT" is displayed.

The machine will slowly feed the label web while it searches for the gaps between labels and measures the label pitch. When the machine has determined this information it will move the

first label edge found during the initialisation process to the position that has been adjusted with the "STOD" parameter. After initialisation has been completed successfully, "ON" is displayed. Initialisation can only take place in the standard menu; it is not required in the product menu since all label data is already stored in the machine's memory. After a E__0 or E__1 message has been cleared whilst in the product menu the first label edge detected at the next press of the <FEED> key will be moved to the position defined by the "STOD" value stored in the machine's memory.

However, when changing to a new product bank or changing label rolls the FEED key should be pressed once so that the label sensor can find the next leading label edge and move it to the correct dispense position previously defined by the STOD parameter

4.4 Control of dispense unit

4.4.1 Dispenser Menu selection

Turning on the mains switch and at the same time pressing one of the panel keys, you may select between several options:

PANEL KEY & mains switch	Function	Display message
FEED	Material initialisation	INIT
NEXT FUNCTION	Standard menu	ON
PRIOR FUNCTION	Product menu	PD0n
ENTER	Configuration menu	CODE

Press the key as long as the display shows the version number. One of the above mentioned messages appears in the display. Calling the product menu is only possible, if at least one product bank has been programmed.

If you do not press a panel key while turning on the machine the same menu is active that has been used before the machine was switched off.

4.4.2 Missing label function and web breaks

The missing label function stops the label web in the correct position even when a label is missing from the label web. If there are more than 3 missing labels from the web then the machine will stop and give the correct message E_1.

If the label web has broken or come to an end then the machine will no longer be able to find the next leading label edge and so after more than 3 signals from the product sensor the error message E_1 will also be generated.

4.4.3 Display and data input

The operator panel controls the operation of the machine. Data can be displayed and changed. The displays have different meanings:

- **Parameter selection:**
In the display a parameter is shown, e.g. POS, STAD, or PD02 (product menu no. 02). By pressing the keys FUNCTION another parameter can be selected. By pressing the key ENTER the data is displayed.
- **Data display:**
The display shows the values of the parameters (e.g. 0123) or possible adjustments e.g. (AUTO). Pressing the FUNCTION keys changes the data value. By pressing the key ENTER the data input is completed and a new parameter is shown.
- **Error display:**
If the display shows e.g. E__XX, the dispenser has recognised an error. A warning is shown by W__XX. As soon as the error has been corrected, you may erase the message by pressing the key ENTER and you will get back to the status the machine was in before the error was indicated.

Note: Data entered in the standard menu are not stored, if the machine is switched off. If you need to store data you have to use the extended menu. Please check if it is of help for you using the product menu in your application.

Display	Menu function	Function data value
ON	Labeller ready	
OFF	Label function suspend	
POS	label position on product	Up to 999.9 mm
STOD	Label stop position at the dispensing edge	Depends on setting of DIST, Label length and RAMP
VELO	Dispensing speed	ALS 330: 0.2 ... 25.0 m/min ALS 430: 0.2 ... 18.0 m/min
STAD	delay time before labelling starts	0,1 ... 999,9 ms
BLOW	apply time	0,1 ... 999,9 ms
INIT	Initialisation of label material (CONT and LPIT are measured according to label size)	Appears after E__0, E__1 and Power on + FEED key depressed, or if the values of CONT and LPIT are changed

Dispenser active _____ **ON**

The dispenser is able to dispense labels.

Dispenser stopped _____ **OFF**

The dispenser function is stopped. Single labels could be dispensed with the FEED key.

Material initialisation _____ **INIT**

A new initialisation of material is necessary. Pressing the FEED key will start the initialisation.

Label position _____ **POS**

The position of the label can be changed by the parameter POS while the machine is in operation. The display is presented in 1/10 mm and means the distance between product sensor and labelling position of the product. The display value 0500 would mean 50.0 mm. By pressing the key PRIOR the value is increased, i.e. the label is put on later. By pressing the key NEXT FUNCTION the value is decreased and the label is put on earlier.

The labelling position is also changed by variation of the product speed. In this case first control you product speed and the dispense speed VELO. Only if both speed matches adjust the position with the POS function.

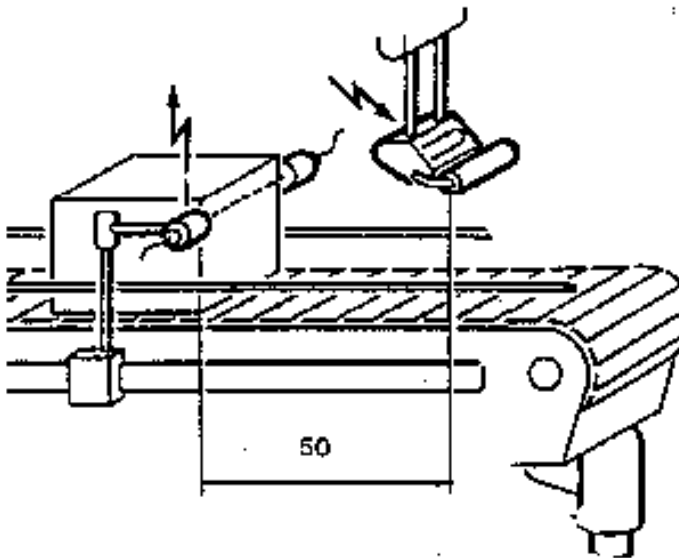


Figure 15 Label position

Stop position _____ **STOD**

The stopping position (STOD) defines the position where the label stops after it has passed the label sensor. The value represents 1/10 mm. In the example 0160 has to be adjusted by pressing the FUNCTION keys. If an increased value is chosen, the label is advanced further, in case of decreased values the position is closer to the label sensor.

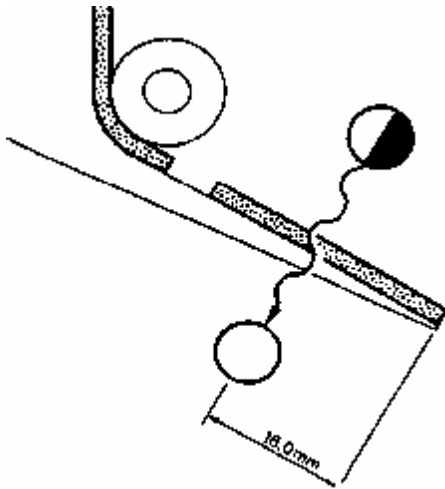


Figure 16 Stop position

Dispense speed _____ **VELO**

The speed value VELO displays the dispensing speed in 0.1 m/min. The product conveyor speed has to be constant to assure accurate labelling. A change of the product speed causes a different position of the label on the product. In case of inaccurate labelling, it should be verified, if the speed of the dispenser and your product match together. This is done automatically if the optional automatic speed follower (APSF) is installed.

If the machine is equipped with an applicator, two parameters in the standard menu can be changed. The delay time which specifies the moment when the applicator must put the label onto the product and the blow time - how long the applying of the label should take.

Start delay _____ **STAD**

By the aid of the parameter STAD the period of time between the recognition by the product sensor and the dispensing of the label onto the product is determined. The time units are ms, the time is adjusted by the keys FUNCTION.

Blow on time _____ **BLOW**

The labelling time BLOW indicates, for how long the applicator should apply the label onto the product. This time is displayed in ms also. BLOW is equivalent to APT2, which is found in the extended menu.

Product menu _____ **PD0n**

This menu can be used for storing data for different labels and products. 15 different sets of product data can be programmed.

If you want to switch to another product, select the respective product number by pressing NEXT and PRIOR, then press ENTER. Now the new product data are activated.

To change the labelling parameters you can call the extended menu. After leaving this menu, your product data will be automatically updated.

The labeller carries out the labelling of your products completely automatically.
Check now and then:

- if there is still enough labelling material on the unwind roll
- if an error has been displayed and the machine no longer effects labelling
- if the label is placed correctly onto the product. If this is not the case, correct the respective parameter in the standard menu.

Control is even simpler if you use an OD-control. The OD-sensor measures the diameter of the material roll and indicates a warning message W__5 as the label roll diameter gets too small, i.e. there are only a few labels left on the label roll. To the warning output, you may connect an alarm indicator, an optical or acoustic signal can be triggered.

4.5 Maintenance

The machine can be easily maintained and has only a few wear parts. If you change the material, note if any glue or waste labels are stuck on the rolls or dispensing edge. In this case you have to clean the respective parts. The machine has to be cleaned at least once a week. Glue and waste labels have to be removed from the rollers, the dispensing edge, the material brush, and possibly from the applicator. All rollers have to be cleaned from any grease. We will supply a special cleaning set for this. The material label sensor has to be cleaned from dust regularly. The material brush should be turned around whenever the material is changed. Any glue has to be removed from the brush. If there is a soft roller at the dispensing edge for applying the label to the product, check if the roller is damaged or dirty. Replace it if necessary. The unwind has to operate in such a way, that the dancer arm does not bounce to its end position. If this is not the case, the friction mechanism has to check. If the backing paper is not wound up accurately, the belts have to be tightened. Check the electrical connections, especially the mains cable for unreliable connection.

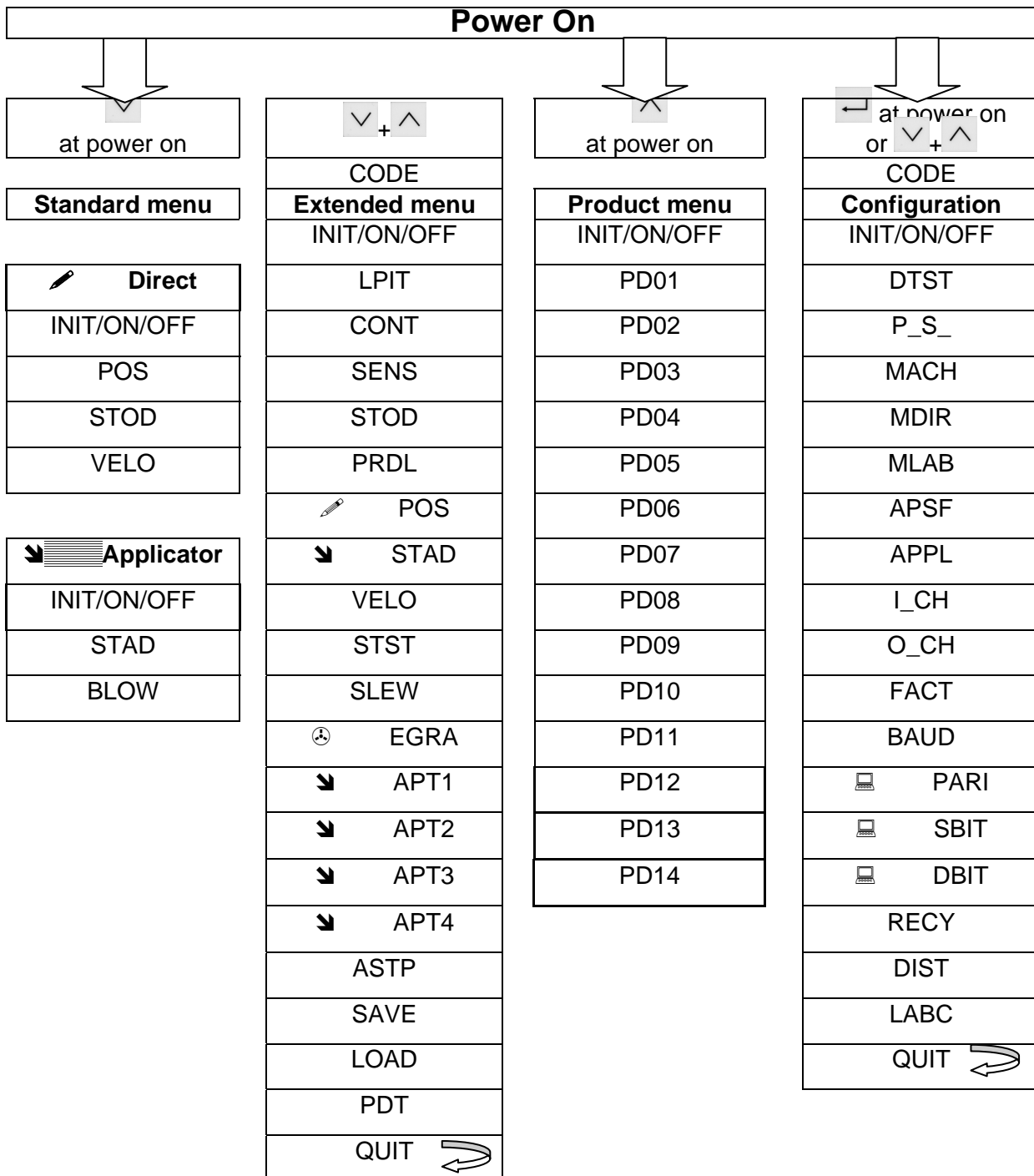
5. Menu structure

The touch panel keys or the optional interface can change labeller parameters. The last entered parameters are the actual ones the machine works with. Programming via the interface is described in **chapter Serial interface**.

There are 2 levels for parameter adjustments. The first one is for parameter selection. With the keys FUNCTION a parameter is selected. By pressing the keys ENTER the second level can be reached. Pressing the keys FUNCTION can change the parameter values. By pressing ENTER you quit the parameter adjustment and the next menu point is shown. For some functions the change of values is effected immediately, for others when leaving the menu point. Details in the menu functions.

There are 4 different menu structures:

- **Standard menu**
This menu is used for normal operation. The most important parameters for the production can be changed here. The adjustments are lost after turning off the machine.
- **Extended standard menu**
This menu offers additional parameters and functions to those in the standard menu. Any adjustments made in the extended menu are stored on quitting the menu and are maintained even if the machine is then turned off.
- **Product menu**
If data banks are stored in the extended menu, the product menu can be activated. In this menu, programmed data banks only can be selected. Changing parameters in this menu is not possible. When storing data in a new data bank, the current adjustments are saved to the new product data bank. You may change data values of a stored data bank by loading the data from the extended standard menu, modifying them and resaving them in a data bank.
- **Configuration menu**
In this menu, you configure the machine according to your applications. Additionally you have access to service test functions. This menu is mainly dedicated to service technicians. All current parameter settings are stored on quitting the configuration menu and are maintained if the machine is then turned off.



Direct dispense	Applicator active	APSF on	only if Baud not set to NONE
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5.1 Standard menu

Usually this menu is used for labelling. All important parameters can be changed while the machine is running. After turning power on, the standard menu is active, unless the product menu was on before the machine was switched off.

If the product menu is active and you want to use the standard menu, switch off the machine again. Press the key NEXT FUNCTION while switching on the machine and the standard menu is active. In the standard menu you have access to all important parameters for labelling. The number of parameter and its kind depends on how the configuration has been made. Change of parameters is active immediately. Changed values are lost when turning off power. If values need to be stored, the extended standard menu has to be used. All available commands are listed down below.

Display	Function	Values
ON	Normal operation	
OFF	Stop labelling operation	
INIT	Initialisation of label sensor and label pitch detection	After status of E__0 and E__1 only
POS	Position of label on the product	Up to 999.9 mm
STOD	Stop position of label at the dispensing edge	0,0 200,0 mm
VELO	Labelling speed	0.2 ... 30.0 m/min
STAD	Delay time for labelling with applicator	1 ... 9999 ms
BLOW	apply time	0.1 ... 999.9 ms

Initialisation _____ INIT

The function **INIT** is available only, if required for a new initialisation. Which is the case under the following circumstances:

- a) Status error message E__0, the feed key was pressed with pressure roller open
- b) Status E__1, while moving the label web no labels have been recognised over a web length of 4 labels.
- c) During power on the FEED key was held depressed.
- d) CONT or LPIT were changed to automatic mode.



Note: A new initialisation after an E__0 or E__1 message is not absolutely necessary if you are sure that the label parameters are all right. Then leave the INIT display with the NEXT key and press only the key FEED to reposition the label at the dispensing edge.

Label position _____ **POS**

Function: The start position **POS** defines when the labelling should take place, after the product has passed the product sensor. Changing the value for POS changes the applied label position on the product.

Only available if no applicator is used.

Range: up to 999.9 mm in steps of 0.1 mm.

Start delay _____ **STAD**

Function: Delay time for the dispensing after the product has passed the product sensor. This value influences the position of the label on the product.

Only available if an applicator is used.

Range: 1 to 9999 ms

Stop position _____ **STOD**

Function: Stop position of the label once the label edge has reached the dispensing edge. The STOD value defines the actual stop position of the label in steps of 0.1 mm.

With this adjustment the label can be made to stop directly at the dispensing edge. To make the label stop after the dispensing edge the value of STOD should be adjusted accordingly.

- Select the parameter **STOD** by pressing the keys FUNCTION.
- By pressing the key ENTER the data input is activated.

Range: 0.0 200.0 (mm).

Labelling time _____ **BLOW**

Function: The labelling time defines how long the applicator should blow the label onto the product.

Only available if an applicator is used. BLOW is identical with APT2

Range: 1 to 9999 ms

Dispensing speed _____ **VELO**

Function: This parameter defines the speed for the label material. Only available if no applicator is used: With an automatic product speed sensor the actual speed is shown.

Range : 0.2 ... 30.0 m/min

5.2 Extended standard menu

The extended standard menu offers additional parameters you may use in your application. On quitting this menu the current parameter settings are stored in memory. Further changes are also written into memory. As long as this menu is active, no labelling is possible. By pressing the key FEED, however, single dispense of labels is possible.

To get into the extended standard menu a password CODE has to be entered. The display shows the first menu point. A survey of all parameters is shown below.

Display	Function	Data value
LPIT	Label pitch	AUTO/5...999 mm
CONT	Label sensor contrast value	AUTO/1...200
SENS	Sensor status	LAB or GAP
STOD	Stop position of label at the dispensing edge	0.0 ... 200.0 (mm)
PRDL	Product length (inhibit of further product- sensor signals)	AUTO, 5 ... 999 mm
POS	Position of label on product	Up to 999.9 mm
STAD	Delay time for start of applicator cycle	1 ... 9999 ms
VELO	Labelling speed	0.2 ... 30 m/min
STST	Check adjusted EGRA value	see text
SLEW	Slew speed	FAST or SLOW
EGRA	Electronic gear ratio adjustment	100 to 500
APT1	Dwell time for applicator	1 ... 7500 ms
APT2	Blow on time for applicator	1 ... 7500 ms
APT3	Restart delay	0 ... 5000 ms
APT4	Time constant compensation	0 ... 500 ms
ASTP	End of air stream signal	-20 ... 50 mm
PDT	Printer dwell time	OFF - 1000ms

Display	Function	Data value
	Printer hold time (is 50% PDT)	
SAVE	Store data in the product data bank	PD01 ... PD09
LOAD	Load data from a product data bank	PD01 ... PD09
QUIT	Leave the extended standard menu	standard menu

Label pitch _____ LPIT

Distance between 2 labels on the label web, measured from leading edge to leading edge. The distance could be set manual or an automatic length measurement is also possible. In case of automatic mode the length is measured with the INIT function. This should be normally done, so label material could be easy changed. Only under special condition the manual mode has to be used.

There are three different modes:

AUTO Select automatic measuring mode

A111 The automatic mode is on and a distance of *111 mm* was measured

M111 The manual mode is selected and a length of *111 mm* was entered.

Range: AUTO or 5 ... 999 mm.

Label contrast _____ CONT

With this function the sensitivity of the standard label sensor could be adjusted. If AUTO is adjusted, the machine scans automatically. The automatic modes doesn't work with transparent labels. In case of another type of sensor (mechanical or capacitive) the setting has to be manual.

There are three different modes:

AUTO Select automatic measuring mode

A111 The automatic mode is on and a contrast of *111* was measured

M111 The manual mode is selected and a contrast of *111* was entered.

Range: AUTO or 1 ... 200.

Sensor status _____ SENS

Function: Status of label sensor is indicated, i.e. there is a label in the sensor the abbreviation LAB is displayed and GAP is shown if there is only backing material inside the label sensor. Can be used for all sensor types i.e. mechanical or electronic ones.

Stop position _____ **STOD**

Function: Stop position of the label at the dispensing edge.

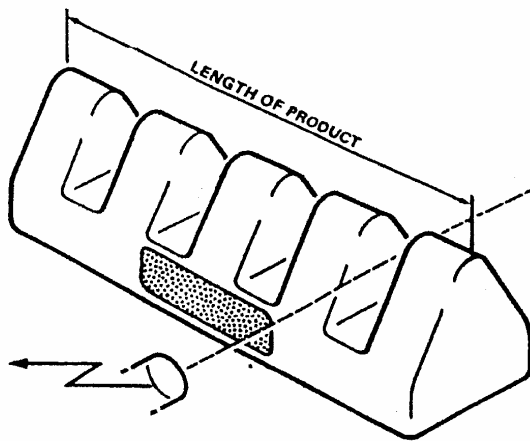
Available: Always

Range: 0.0 200.0 mm

Product length _____ **PRDL**

Function: The product length avoids multi labelling in case of difficult products. Normally it is set to AUTO. This means that the product length is set to the label length.

After the product sensor has detected the edge of the product all signals that might be triggered while the product is passing the product sensor are inhibited. This function can be helpful in cases where the product is transparent or has several detection marks or edges. Such a case is shown below.



The product sensor supplies several signals while the product passes the product sensor. If the PRDL is not adjusted according to the dimension of the actual product the warning W_0 may be given of false multiple product detection signals. The defined product length suppresses all signals after the first product sensor signal has been received.

By pressing the keys FUNCTION the parameter **PRDL** is selected. The data input is selected by pressing the key ENTER.

If an applicator is fitted to the labeller, the product length is not defined as a distance but as the **time** that the product needs to pass the product sensor. The **time** is adjustable between 5 and 9999 ms.

Available: Always

Range: AUTO or 5 - 999 mm

Label position _____ **POS**

Function: Position of label on the product.

Only available if no applicator is used.

Range: up to 999.9 mm in steps of 0.1 mm.

Start delay _____ **STAD**

Function: Delay time for the dispensing by means of an applicator after the product has passed the product sensor. This value influences the position of the label on the product.

Only available if applicator is used.

Range: 1 to 9999 ms

Dispensing speed _____ **VELO**

Function: The labelling speed may be adjusted with the parameter **VELO**. Values between 0.2 and 30.0 m/min are possible. The speed has to be adjusted so that it matches the product speed.

When an applicator is fitted to the machine, this parameter defines how fast the label will be dispensed on to the applicator.

EGRA value check _____ **STST**

Use this function to adjust the EGRA value. If the drive-roller speed is higher than that of the conveyor then increase the EGRA value, if it is lower decrease the EGRA value so that the conveyor speed and drive-roller speed match.

Slew speed _____ **SLEW**

Function: For some situations the labeller can run with a different, higher speed. This occurs during compensation of a missing label on the web, positioning the label at the dispensing edge during initialisation or after pressing the feed button if the APSF-mode is selected. The resulting speed depends on the selection (FAST or SLOW) and the APSF-mode.

SLEW setting	FAST	SLOW
APSF off	Max speed	VELO
APSF on	Max speed	12 m/min

Electronic gear ratio adjustment _____ **EGRA**

The parameter EGRA appears in the extended menu only after the APSF function has been switched on.

The range of the EGRA parameter is 100 to 500, representing from 1 to 5 encoder pulses per millimetre of conveyor movement. The full EGRA range can be used up to 30 m/min conveyor speed.

With an applicator there is no realistic limit to the conveyor speed and at very high-speeds an EGRA value at the lower end of the range should be used.

Dwell time _____ **APT1**

Function: Only used when an EP- applicator is necessary. It defines for how long the pneumatic cylinder is switched on.

Available only with applicator.

Range: 1 ... 7500 ms

Blow on time _____ **APT2**

Function: Only used when an applicator is necessary. It defines for how long the label is blown onto the product.

Available only with applicator.

Range: 1 ... 7500 ms

Restart delay _____ **APT3**

Function: This parameter defines the time for a next label dispense after the applicator cycling is completed.

Available only with applicator.

Range: 0 ... 5000 ms

Time constant compensation _____ **APT4**

Used to control the labelling position when using an applicator in conjunction with APSF.

The parameter APT4 is set to the time that the label takes to reach the product from the start of the applicator cycle. For blow applicators this will probably be less than 25 ms, for EP (air-cylinder) applicators the time will be much more - possible 60 ms to 100 ms depending on the length of the air cylinder.

To calculate the correct value proceed as follows:

Set APT4 to 1. Run the conveyor at a fairly low speed such as 10 m/min and note the label position on the product. Now run the conveyor at a much higher speed such as 25 m/min and note how far the label position has shifted back.

Use the following formula to calculate the correct value for APT4...

$$(\text{LABEL SHIFT (mm)} \times 60) / (V_{\text{high}} - V_{\text{low}}) = \text{APT4}$$

V_{high} represents the higher conveyor speed used (in m/min)

V_{low} represents the lower conveyor speed used (in m/min)

eg. If the shift is 3mm and the conveyor speeds 10 m/min and 25 m/min are used the correct value for APT4 is:

$$(3 \times 60) / (25 - 10) = 180 / 15 = 12$$

The calculated value should then be tested by running the conveyor at a high and a low speed and checking that the placement position does not change. If the label position moves back slightly at higher speed then increase APT4 a little, if it moves forward at higher speed then decrease APT4 a little.



Note: The EGRA parameter must be set correctly as well as the APT4 parameter for correct label positioning on the product.

End of air stream signal _____ **ASTP**

This parameter determines how long the air stream signal will remain active after the label dispense has finished. Valid in all modes (direct dispense, applicator, APSF and fixed-speed).

Printer dwell time _____ **PDT**

This determines the dwell time of the stamp-printer. A new dispense is prevented after PDT expires for a time equal to 50% of PDT.

Save parameter in data bank _____ **SAVE**

Function: After selection this function you can save the current parameter setting to a data bank.

Always available.

Range:	NEW1 .. NE15	Create a new data bank
	PD01 ... PD15	Overwrite existing data bank
	EXIT	Leave function without modification

Load data bank _____ **LOAD**

Function: After selection this function you may load a predefined parameter setting.

Always available.

Range:	PD01 ... PD15	Load a defined data bank
	EXIT	Leave function without modification

Leave Menu finishing _____ **QUIT**

Function: If this function is selected, you get back to the standard menu

Always available.



Note: Modified parameter values are only stored if the menu is left by using the QUIT function. If the power is switched off before leaving the menu by quit all modifications are lost.

5.3 Product menu

If parameters have to be changed because of different products and labels, the product menu can be used. The machine offers a data bank in which 14 sets of data can be stored.

If you want to switch to a particular product, select one of the product numbers by pressing NEXT or PRIOR and confirm with ENTER. The new parameters are valid now.

After switching to a new product bank the machine assumes the label roll has been changed or that a parameter such as STOD is different and so requires an initialisation of the label position at the dispensing edge. This is done by pressing the FEED key after loading a new product bank at which time the machine will move the first detected label edge to the dispense position.



Note: If the FEED key is not pressed after loading a new product bank the first detected label edge will be moved to the dispense position at the first signal from the product sensor!



Note: The function FACT available in the configuration menu clears all the product banks.

6. Configuration menu

Adjustments in the configuration menu are necessary during installation of the machine only. In the **configuration menu**, the required optional functions can be selected. Some service support functions in the configuration menu will be useful for the service staff.

Possible adjustments:

- Recognition of the product at the leading or trailing edge
- Left or right hand version of labeller
- Machine type
- direct dispensing or several type of applicators
- Parameters for the interface

Possible tests:

- In/output test
- Test run without labelling

The function Factory initialisation resets all parameters to default values.

Calling the configuration menu

There are two ways to call the configuration menu:

- Press the key ENTER and switching on power at the same time. The display shows 'CODE'.
- Press the keys NEXT and PRIOR at the same time when a parameter function is displayed. The display shows 'CODE'.

The password has to be entered by pressing the following keys:

- * 1 time PRIOR FUNCTION
- * 3 times NEXT FUNCTION
- * 2 time ENTER
- * 3 times NEXT FUNCTION

When the password is entered correctly, the display shows `DTST`. After pressing PRIOR or NEXT the next menu, point will be shown. If a wrong password was entered, you go back to the previous menu.

6.1 Handling the menu

The menu structure is shown in the following table. By means of the key PRIOR you switch to the prior function, and with the key NEXT to the next following function in the menu.

If you press the key ENTER the current parameter value of a function is shown. The current parameter value can be changed with the keys PRIOR FUNCTION or NEXT FUNCTION.

Values are stored by pressing the key ENTER.

Display	Function of the parameter	Possible data entry
DTST	Test run without labels	
P_S_	Product sensor detects at leading or trailing edge of product	LEDG, TEDG
MACH	Machine type	230, 720, 330, 430
MDIR	Motor running direction for left or right hand	<---- --->
MLAB	Handling of missing label	NONE, WARN, ERR1, ERR2, ERR3
APSF	Automatic product speed follower	YES, NO
APPL	Direct dispense mode, or applicators	DIR, ASA, EP, RVEP
I_CH	Test of inputs	
O_CH	Test of outputs	
FACT	Reset of all parameters to default values	YES, NO
BAUD	Baudrate of the interface	NONE, 300 to 192%
PARI	Parity bit	NO, 0PRT, ODD, EVEN
SBIT	Number of Stop bits	1 bit, 2 bit
DBIT	Number of data bits	7 bit, 8 bit
RECY	Recycle (simulates max labels/min)	see text
DIST	Distance label sensor to dispensing edge	10 ... 999 mm
LABC	Number of dispensed labels	see text
QUIT	Return to extended standard menu	

6.2 Menu functions

The menu functions are explained in detail here.

Permanent test _____ **DTST**

The permanent test makes a test run without using labels. In the display the numbers of dispense cycles is shown (see description LABC). Immediately after starting the function, the machine runs in a self-test. The test run works with all adjusted parameters. The test can be stopped by pressing the key ENTER.

Polarity of the product sensor _____ **P_S_**

The machine requires a start signal for each product to be labelled. After the start delay (STAD) the labelling starts. The signal is usually created by a light sensor at the conveyor. A PLC can also supply this signal. The light sensor supplies a signal when the light beam is interrupted by the product. By means of the function **P_S_** it will be selected whether the leading edge or the trailing edge of the product should trigger the signal.

Usually the trailing edge of a product is used. Reasons for detecting the leading edge can be:

- shape of product (your should avoid detecting a radius or a declined edge)

In case of using other than the standard product sensor's, the meaning of the display can be reversed. The adjustment you need you may change with the keys NEXT or PRIOR.

Factory adjustment: **LEDG**

Machine type _____ **MACH**

The software is identical for several different machines. Choice the correct type.

Dispensing direction _____ **MDIR**

The machine is available in a right and left-hand version. In the right hand version the product transport is from left to right when you look to the front of the machine. The adjustment is done in the factory and should **not be changed**.

Factory adjustment: RIGHT

Handling of missing label _____ **MLAB**

There are several condition the dispenser is not able to dispense a product:

- the distance between products is too close
- an additional printer is not fast enough
- the loop in the ALX720 is empty (end of job, printer error)

With this function, you can decide how to react:

NONE	Do nothing. The unlabeled product will be detected later in the line.
WARN	Set the warning output and displays W__0. The production continued.
ERR1	Set the error output to stop the production line immediately and display E_10.
ERR2	The first unlabeled product generates the warning. Two unlabeled products in a sequence set the error.
ERR3	The error condition will be set at 3 unlabeled products.

Automatic product speed follower _____ APSF

Under parameter APSF the automatic product speed follower function can be activated (ON / OFF). The APSF sensor is fitted to the conveyor and supplies signals that represent the speed of the conveyor. The installation of the sensor and the adjustment of the parameter have been carried out according to your application and should not be changed.

The compensation steps for the current conveyor speed are constantly recalculated rather than just when the product-sensor is triggered. This means that a change in conveyor speed between the time that the product is detected and the time it reached the dispense position has no effect on labelling placement accuracy.

There is no optimum EGRA setting. The compensation steps are calculated using the current EGRA setting rather than using fixed compensation step values for a predetermined EGRA setting and so any EGRA value works just as well.

At slow speeds the label dispense speed matches the conveyor speed exactly regardless of the EGRA setting. For instance if the dispenser needs to make 1.236 steps per encoder pulse then at the first four encoder pulses the dispenser will make one step but will then have fallen $4 \times 0.236 = 0.944$ steps behind. On the fifth encoder pulse the dispenser will make two steps and so be $(5 \times 0.236) - 1 = 0.18$ steps behind. The dispenser will always be less than one step behind. The dispenser thus always dispenses the correct amount of label in regard to the product movement even when the conveyor is starting from rest or coming to rest.

Type of applicator _____ APPL

In most cases, the label is dispensed directly onto the product. If this is not possible, an applicator has to be used. We offer a number of different applicators. In this function, the installed applicator has to be defined. You may select the applicator type you have ordered for your application (display shows 'ASA', 'EP', RVEP or another applicator). In case of direct dispensing the function direct dispense has to be chosen:

Display shows 'DIR'.

The adjustment is done in the factory and should not be changed.

RVEP (ReVerse EP) operates as an EP applicator except that once the label has been dispensed onto the applicator the applicator cylinder is extended to wait for the next product to arrive. This provides more accurate labelling than with EP applicators because variation in the time it takes for the cylinder to extend does not affect the labelling position.

Additional functions in the standard menu

Depending on which parameter has been defined under APPL different menu functions are shown in the standard menu. If an applicator is used additional times BLOW and STAD for controlling the applicator cycling are available.

Input and sensor check _____ I_CH

To display the status of sensor's and inputs information are grouped in 3 blocks you can select by pressing the NEXT or PRIOR keys. The character for the inactive state is different to identify the various blocks.

Block 1 (inactive = 0)

- N = Power fail detection (only can case of malfunction)
- P = Product sensor active
- A = Signal from APSF sensor
- R = Ready input stepper motor control

Block 2 (inactive = -)

- I = Inhibit input active
- L = Unused input (Loop control on ALX 720)
- H = Applicator home switch active
- E = Applicator end switch active
- Z = Horizontal home switch

Block 3 (inactive = .)

- S = pressure switch activated
- J = Jumper 3 closed
- O = OD control material active
- M = Label sensor on material
- G = Label sensor on gap

For a correct label sensor information CONT has to be adjusted before. Leave the function by pressing key ENTER.

Output check _____ O_CH

With the NEXT and PRIOR keys you can select the output you will switch on for testing. Leave the function by pressing key ENTER.

On selecting the O_CH function the display shows "1" and the first output is active. Using the up-arrow and down-arrow keys the user can select any one of outputs 1 to 8. Only one output is on at a time so that the user can easily see if he has any shorted connections (any output that is being turned on by another part of the program such as an error or ODC output will stay on until the error or ODC input is cleared).

- 1 = terminal 15 = BLOWON
- 2 = terminal 16 = AIRSTREAM
- 3 = terminal 17 = CYLINDER
- 4 = terminal 18 = PRINT_OUT
- 5 = terminal 19 = WARNING
- 6 = terminal 20 = ERROR

7 = terminal 31 = READY
8 = terminal 32 = ODC_OUT / HORI_CYL

Adjustment resetting _____ **FACT**

This menu point sets all parameters back to the factory values. All parameters will be reset, so please note all your adjustments before. When you call this function the display shows 'NO'. After you have left by pressing the key ENTER there is no change.

When you change with the key NEXT to YES and press ENTER all parameters are reset to default values.

Note: This function also clears all product banks.

Interface baud rate _____ **BAUD**

With this function the baud rate of the interface will be adjusted. This is an option of the machine. If you do not have this option, the parameter has to be set to 'NONE' to protect the interface and to avoid errors. The following baud rates are adjustable: 150, 300, 600, 2400, 4800, 9600 and 19200 baud. When calling the function FACT this parameter will be set to 'NONE'. When the machine is delivered with the interface the baud rate is set to 9600. Select your baud rate by pressing the key NEXT or PRIOR. With the key ENTER the adjustment is stored.

Factory adjustment: NONE

Parity bit _____ **PARI**

The function is only visible if a baudrate is selected. The parity bit is necessary to check the data transfer. In case of wrong data transfer an error message will be given. The adjustment of both machines has to be identical. Usually the transfer is made without parity bit.

Possible adjustments:

- 'NO': Not sending or receiving a parity bit
- 'EVEN': produce a parity bit so that an equal number of '1' signals is created
- 'ODD': produce a parity bit so that an odd number of '1' signals is created.
- 'OPRT': The parity bit is always 0

By pressing the key NEXT or PRIOR the adjustment is selected and by pressing the key ENTER the function is finished.

Factory adjustment: NO

Number of stop bits _____ **SBIT**

The function is only visible if a baudrate is selected. This parameter defines the number of stop bits. By pressing the key function you can select between '1BIT' or '2BIT'. By pressing the key ENTER this function will be left.

Factory adjustment: 1BIT

Number of data bits _____ DBIT

The function is only visible if a baudrate is selected. With this function you can select between 7 or 8 data bit protocols.

Factory adjustment: 8BIT

Recycle (simulates max labels/min) _____ RECY

The Auto-recycle function, is used to determine the maximum possible cycle rate with the current parameter settings.

It will cycle through applicator cycles automatically by internally generating a product-start the instant a cycle has been completed and displays the average cycle rate per minute in the display. It also operates with no applicator selected by dispensing labels at the maximum possible rate. The maximum labelling rate for different values of PDT can be determined using the RECY function without having to physically connect the printer.

Distance sensor to dispensing edge _____ DIST

This function defines the distance between the material label sensor and the dispensing edge. This value is shown in steps of 0.1 mm (e.g. 0456 means 45.6 mm). The measured value can be adjusted by pressing the key FUNCTION.

If the DIST value has been adjusted correctly the first leading label edge detected at initialisation will be moved exactly to the dispensing edge, as long as STOD is set to 0.0 (mm). This parameter is important for the missing label compensation. If it is not correctly adjusted a missing label on the material roll, will not be compensated correctly and the product will not be labelled.

Value range: 10.0 999.9 mm

Label counter _____ LABC

Each dispensed label increases the counter by 1. The capacity of the counter is for 999 999 999. The total number can be seen in 3 sections, press the keys FUNCTION as described down below:

Mnnn Knnn .nnn

- where M represents millions
- K represents thousands
- .represents units

On entering the "LABC" parameter the units are displayed. By using the arrow keys can then be used to change between the millions, thousands and units displays.

By pressing NEXT and PRIOR at the same time the counter is set to 0. By pressing the key ENTER the function will be left.

Leave Menu finishing _____ QUIT

Function: If this function is selected, you get back to the standard menu



Note: Modified parameter values are only stored if the menu is left by using the QUIT function. If the power is switched off before leaving the menu by quit all modifications are lost.

7. Serial interface

The machine has a serial interface according to the standard RS232C. Via this interface parameters can be adjusted. All received commands are tested for syntax and legal value range.

Invalid commands and parameters are ignored. An error message is not given in this case. All commands received over the serial interface are tested for syntax and range; invalid commands and out of range parameter values are ignored. A warning message is not given in these cases. However in the case of framing, parity or overrun errors the warning "W__3" is generated.

The commands are made up of sequences of ASCII characters. Each command starts with "#" and "!" followed by a 4 character code. The reception of the "#" character indicates the start of a new command to the machine.

The codes are similar to the parameter names shown in the display.

7.1 Data of the serial interface

The pin connection of the interface plug is shown in the table below.

Dispenser connector		Signal description			PC	
25 pol D-Sub	9 pol D-Sub	Direction	Code	Description	25 pol	9 pol
Socket 2	3	Output	TxD	Transmit data	3	2
Socket 3	2	Input	RxD	Receive data	2	3
Socket 5	8	Input	CTS	Clear to send	4	7
Socket 4	7	Output	RTS	Request to send	5	8
Socket 7	5		GND		7	5
Socket 20	4	Output	DTR		6	6
Socket 24		(if jumper on)	+ 10V	For external use	8	

All other pins are not connected.

Adjustable data values

Baudrate	150, 300, 600, 1200, 2400, 4800, 9600, 19200 Baud
Data bits	7 or 8 bits
Stop bits	1 or 2 bits
Parity	No Parity, Parity bit always 0, odd or even parity
Handshake	RTS/CTS

Factory interface deactivated, at reactivation the parameters will be set to 8 data bits, 2 stop bits and no parity bit.

7.2 Interface commands

The below described commands will change one of the labelling parameter. The values are not stored and will be lost when turning off power.

If the sequence nnnn is replaced by the character "?" then the current value of that parameter will be returned by the labelling machine as a 4 character string confirming the name of the parameter requested followed by 4 numbers representing the current value of that parameter. The character 04H terminates all return messages.

Example

PC send the message: #!VELO?
Machine returns: VELO0300<04H>

Command	Description	Range
#!APOSnnnn	Value APOS	-0050 – 0100 mm
#!APPLnnnn	Applicator type	0000 direct dispense 0001 ASA 0002 EP 0003 EP_U 0004 PLUA 0005 INDX
#!APSFnnnn	APSF function	0000 off 0001 on
#!APT1nnnn	Applicator time	0001 – 7500 ms
#!APT2nnnn	Applicator time	0001 – 7500 ms
#!APT3nnnn	Applicator time	0000 – 5000 ms
#!ASTPnnnn	Value ASTP	-0020 – 0050 mm
#!BANKnnnn	Change product bank	0000 - 0009
#!BLOWnnnn	Blow on time = APT 2	0001 - 7500 ms
#!COMPnnnn	Automatic label compensation	0000 = Off 0001 = On
#!CONTnnnn	Material contrast	0001 – 0200 0000 automatically
#!DISTnnnn	Distance label sensor – dispensing edge	0080 – 9999 * 0.1 mm
#!EGRAnnn	Gear ratio	0300 – 1000
#!LPITnnnn	Label length	0005 – 0999 mm 0000 automatically
#!MACHnnnn	Machine type	0000 ALS230 0001 ALX720 0002 ALS330 0003 ALS430
#!MDIRnnnn	Motor direction	0000 Right --- >

Command	Description	Range
		0001 Left < ---
#!MLABnnnn	Missing label error	0000 NONE 0001 Warning 0002 Error 1 0003 Error 2
#!PDT nnnn	Print dwell time	0001 – 1000 ms 0000 printer off
#!PHT nnnn	Printer hold time	0001 – 7500 ms
#!POS_nnn	Labelling position	0001 – 9999 * 0.1 mm
#!PRDLnnnn	Product length	0005 – 4000 mm
#!P_S_nnnn	Polarity product sensor	0000 LEDG 0001 TEDG
#!RAMPnnnn	Acceleration Ramp	0000 NORM 0001 FAST
#!SLEWnnnn	Slew speed	0000 = FAST 0001 = SLOW
#!STADnnnn	Start delay	0001 - 9999 ms
#!STODnnnn	Stop position	0080 - 9999 * 0.1 mm
#!VELOnnnn	Speed	0020 - 0300 * 0.1m/min
#!SAVEnnnn	Store in data bank	0001 - 0009
#!LOADnnnn	Load data bank	0001 - 0009

The following described commands do not have parameter values. With these commands the host can monitor and control the machine.

#!CLRC Set label counter to 0

#!CLRE Clear error message

#!CLRW Clear warning

#!ERRF The machine sends an error status to the monitoring computer. The message ERR8__4__1_<04H> means, error 8, 4 and 1 have occurred.

#!WARF The machine sends a warning status to the monitoring computer. The message WARF7____0 means: The warnings 7 and 0 have occurred.

#!LABC The machine sends the number of dispensed labels e.g. LABC0000008359 back

#!SP__ The machine is set to off. The product sensor is disabled and labelling will therefore be stopped.

#!SR__ The machine is set to on. The product sensor is enabled and labelling can restart.

For a full automatic operation, the following procedure in case of an error is required:

- #!ERRF Request error
- #!CLRE Clear error message after fixing the error. The labeller shows „INIT“
- #!SR__ Clear INIT message

Bit definition in error flag

Error number	Error message in display	Error description
0	E__0	Pressure roller open
1	E__1	End of material (4 missing labels)
2	E__2	EP-applicator error
3	E__3	checksum error configuration data
4	E__4	checksum error parameter bank
5	E__5	Error 10V low
6	E__6	Error 24V low
7	E__7	missing label on product
8	E__8	Error motor driver

Bit definition in warning flag

Warning	Message in display	Warning description
0	W__0	Next product start before finished
1	W__1	Product start but no material not initialised
2	W__2	EEPROM error during write
3	W__3	Interface warning
4	W__4	APSF speed too fast
5	W__5	End of material (OD-Control)
6	W__6	too many products
7	W__7	Loop not ready (720)

8. Connections and signals

This machine has a number of inputs to connect sensor's and a control. Outputs are available for applicators, a printer and other purposes.

8.1 Output signals

This machine has eight outputs, which switch the output from open circuit to + 24V. The maximum current must not exceed 500 mA. The four signals for error messages, machine ready, low material and warnings are available for other machines in the process or additional alarm signals. For connecting an applicator three signals are available and one additional for the printer.

The output signals are available at terminal connector CN33 on the main board. The wiring of the terminal is shown otherwise.

8.1.1 Error and warning output

The outputs for errors and warnings are available on the terminal CN33 and optional on the I/O plug. The signals are switched active (+24V) if an error or warning occurs. When the error or warning is erased, the signal becomes passive again.

8.1.2 Printer output

This machine can be connected to a printer. To use the printer the PDT parameter should be adjusted.

A new label cannot be dispensed until the printer dwell time set in PDT is over.

8.1.3 OD-Control output

This output is switched active (+24V) if the OD-Control input is switched active during dispensing.

8.1.4 Ready output

This output shows when the machine is ready for labelling. This output is switched inactive if there is:

- an error message appears in the display
- the mains supply voltage has fallen below specification
- the machine requires initialisation
- in OFF condition.

8.2 Applicator modes

The machine is able to dispense the label direct on the passing product. There is also the possibility to drive without any external control a wide range of applicators.

8.2.1 Signals for direct dispense

For direct dispensing the airstream signal can be used to control a pneumatic driven dispensing edge. The start of the airstream signal (= motor run signal) could be behind the start of the dispense motor, adjusted with the function APT3. The signal is switched inactive, when the label dispense has been completed. Also the stop could be adjusted with the function ASTP to switch inactive before or behind the dispense motor stop.

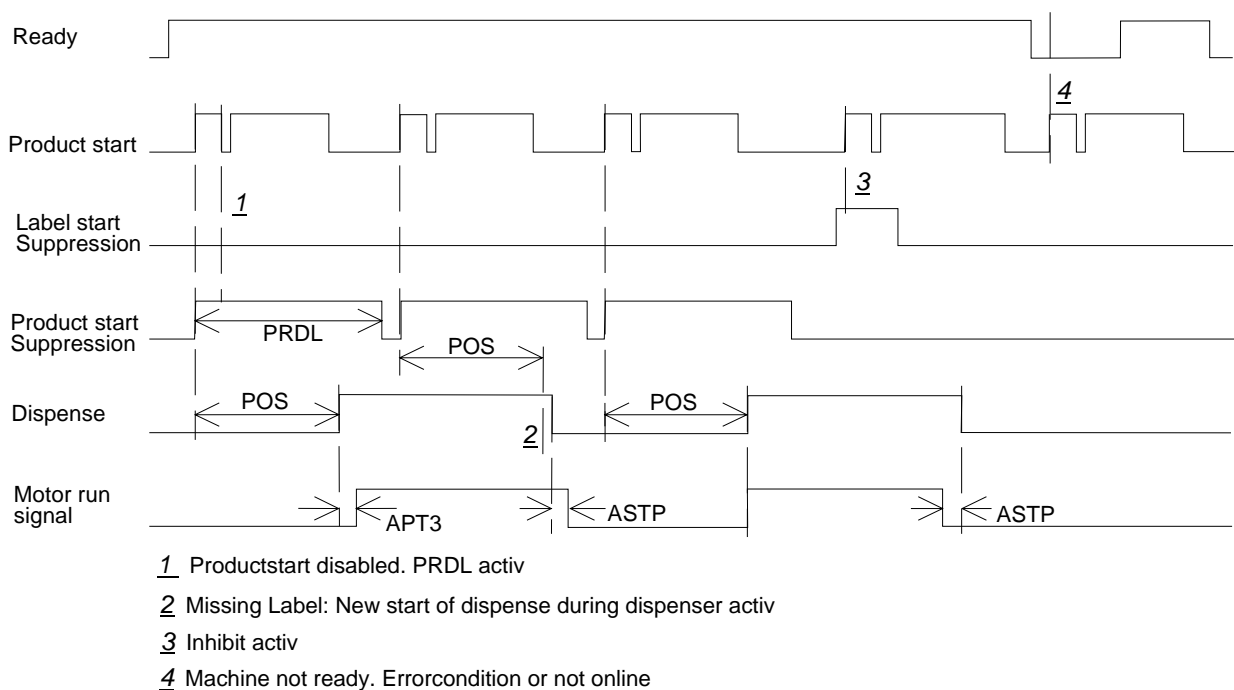
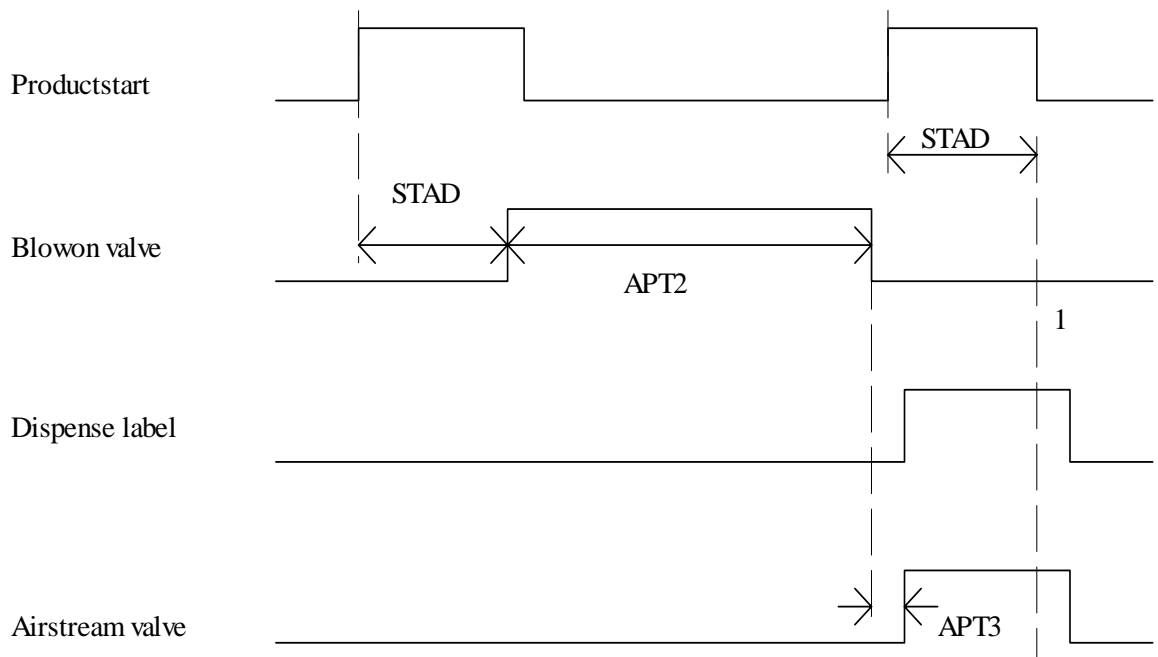


Figure 17 Timing diagram direct dispense

8.2.2 Control signals for the ASA applicator

For controlling an air stream applicator the signals air- stream and blow on are necessary. The time period APT2 defines how long the blow on signal is active. After labelling the product and the time period of APT3 a new label will be dispensed on to the applicator. After that the machine is ready for a new labelling.

All errors are given after 5 seconds!



1 Missing Label: Labeller not ready for dispense

Figure 18 Timing ASA applicator

8.2.3 Signals for the EP applicator

For controlling the applicator the signals air stream, cylinder valve and blow on are necessary. After a product signal has occurred the labelling cylinder valve is switched active after the delay STAD. However if at this time the applicator is not in the home position then error message E__2 is generated. After the delay time APT1 the blow on valve is switched active for the time APT2.

When APT2 is completed both the labelling cylinder valve and the blow on valve signals are switched inactive. If the control does not read the home position in the time given - $3 * (APT1 + APT2)$ - than the error message E__2 is generated.

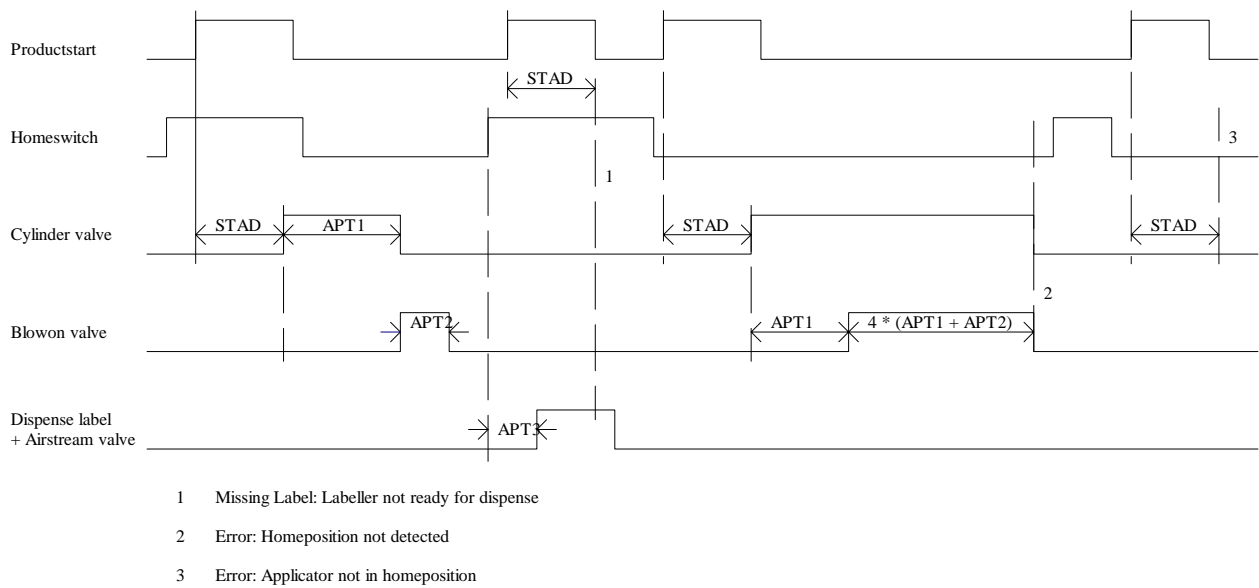


Figure 19 Timing EP applicator

8.2.4 Applicator connector

The applicator connection is done via a 15 pole D-sub connector common to other machines.

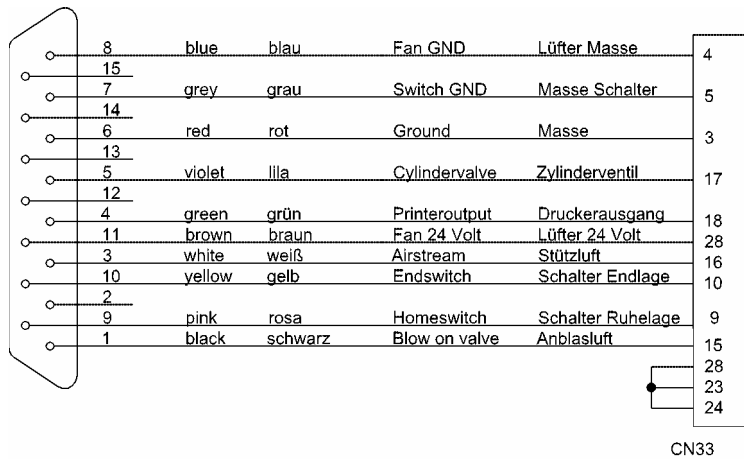


Figure 20 Applicator connector

8.3 Input signals

This machine (dispenser) is provided with photo coupled inputs for:

- the product sensor signal
- an inhibit signal for inhibiting labelling
- a signal from an OD control which shows the end of the material roll.
- a signal from an automatic product speed follower
- the EP applicator signals from the HOME and END switches
- an unused input for future extensions or customer specific software (used for loop control in the 720)

The inputs are galvanically separated through photo couplers to connect to PNP or NPN outputs. The wiring and the connection of the signal plug is shown otherwise. The input voltage across the inputs must be in the range of 15 V to 30 V to switch active.

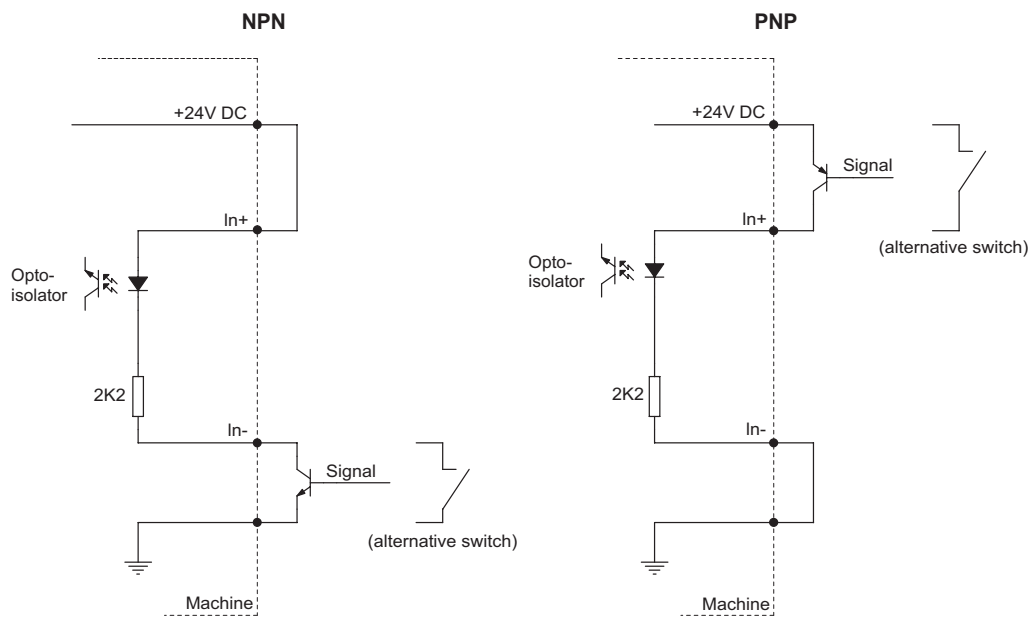


Figure 21: Connecting NPN (left) or PNP (right) inputs.

8.3.1 Product sensor

The product sensor starts the labelling. The source of the signal could be a optical sensor, a switch or a signal from a PLC. The time between start signal and start of dispensing (adjusted with POS) should be as small as possible. This means that an optical sensor should be placed 10 to 20 mm before the dispensing edge. The minimum distance is necessary for the internal speed compensation.

The machine is supplied as standard with one socket for connecting the product sensor. You may either use a NPN or PNP type sensor output.

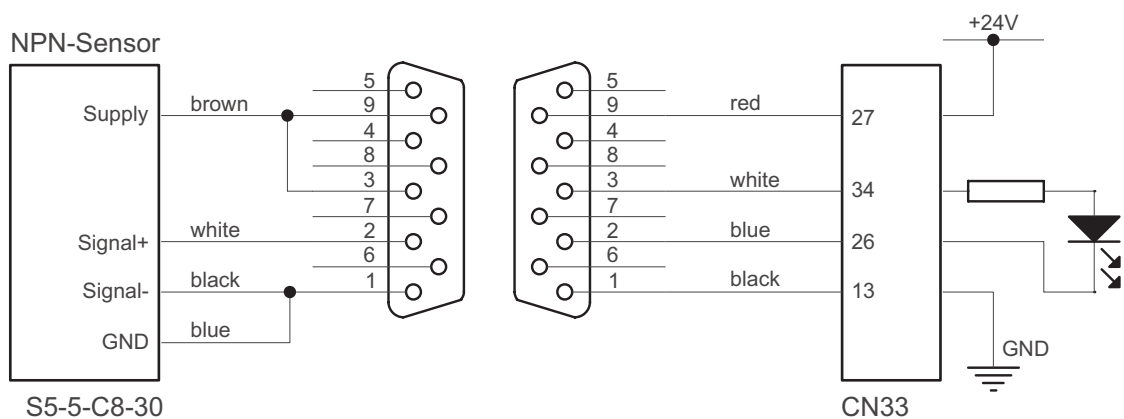


Figure 22 Example for connecting an NPN sensor (Datalogic)

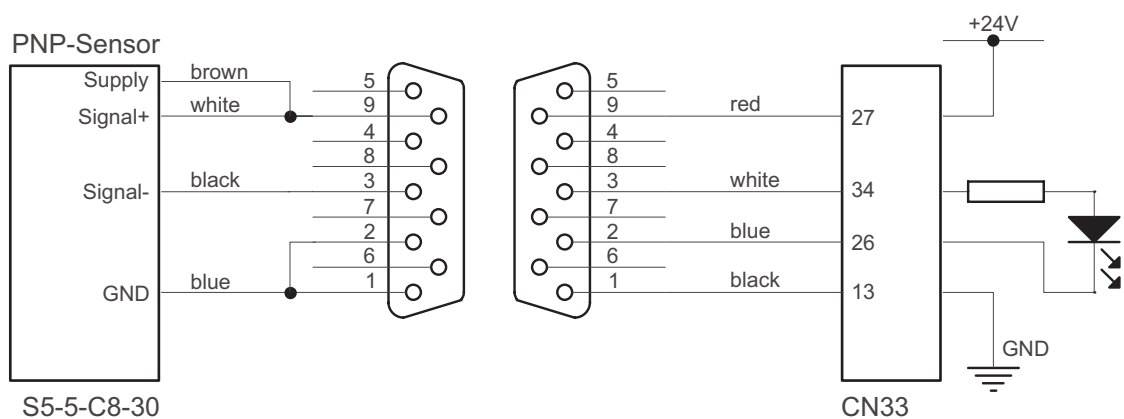


Figure 23 Example for connecting an PNP sensor (Datalogic)

8.3.2 OD Control sensor

Optional an OD control could be mounted to control the label roll. If the label material is nearly empty the sensor gives an signal. A warning message and an output signal inform the personal that in the next time the material has to be changed.

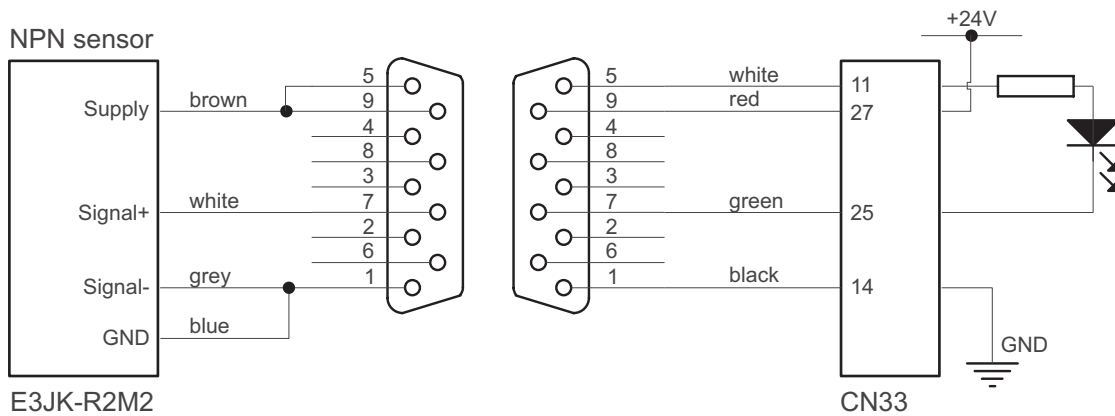


Figure 24 NPN connection of optional ODC sensor

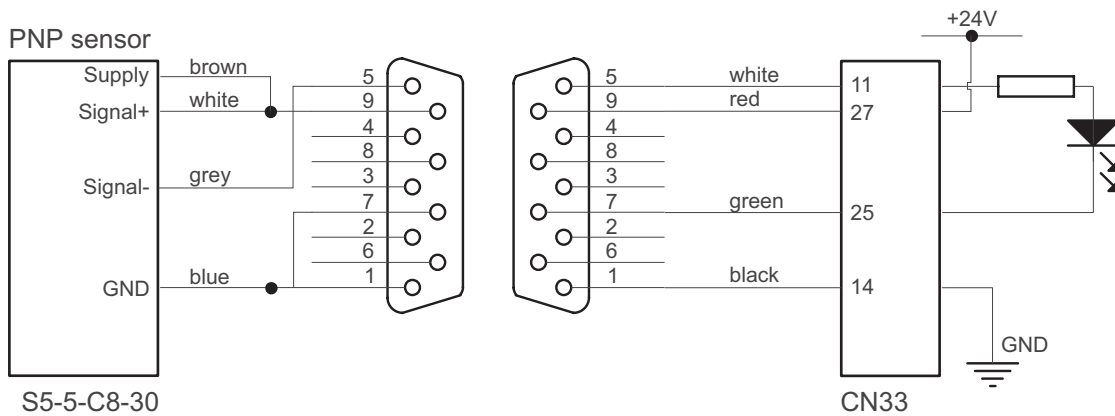


Figure 25 PNP connection of optional ODC sensor

8.3.3 APSF sensor

For the APSF function (Automatic speed follower) a rotary encoder has to be installed. For optimum labelling accuracy the rotary encoder should be selected so that it produces one pulse for every 0.125 mm of product movement. The connection of the encoder should be done with a shielded cable. For correct operation the rise and fall time of the encoder signal should be 1 μ s.

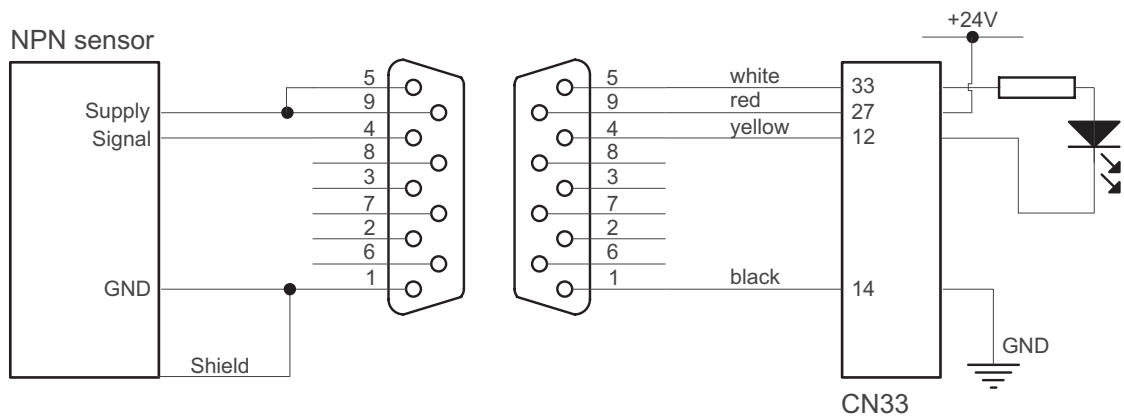


Figure 26 Connection of a NPN type APSF sensor

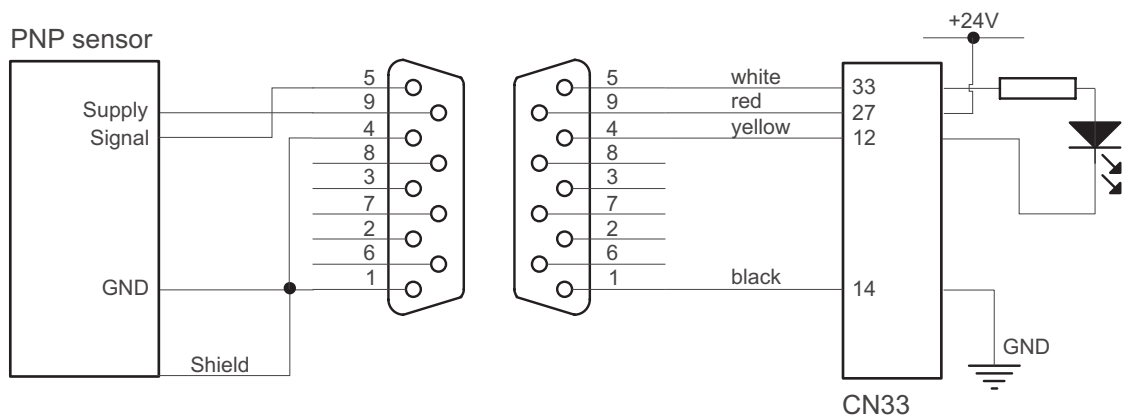


Figure 27 Connection of a PNP type APSF sensor

8.3.4 Control signals

An optional connector could be installed for integration of the machine in the line control.

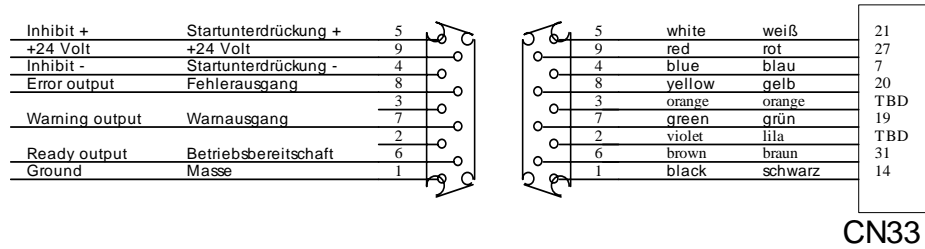


Figure 28 Optional connector for process contro

Mainboard ALS 330 / 230 No. 8770.12

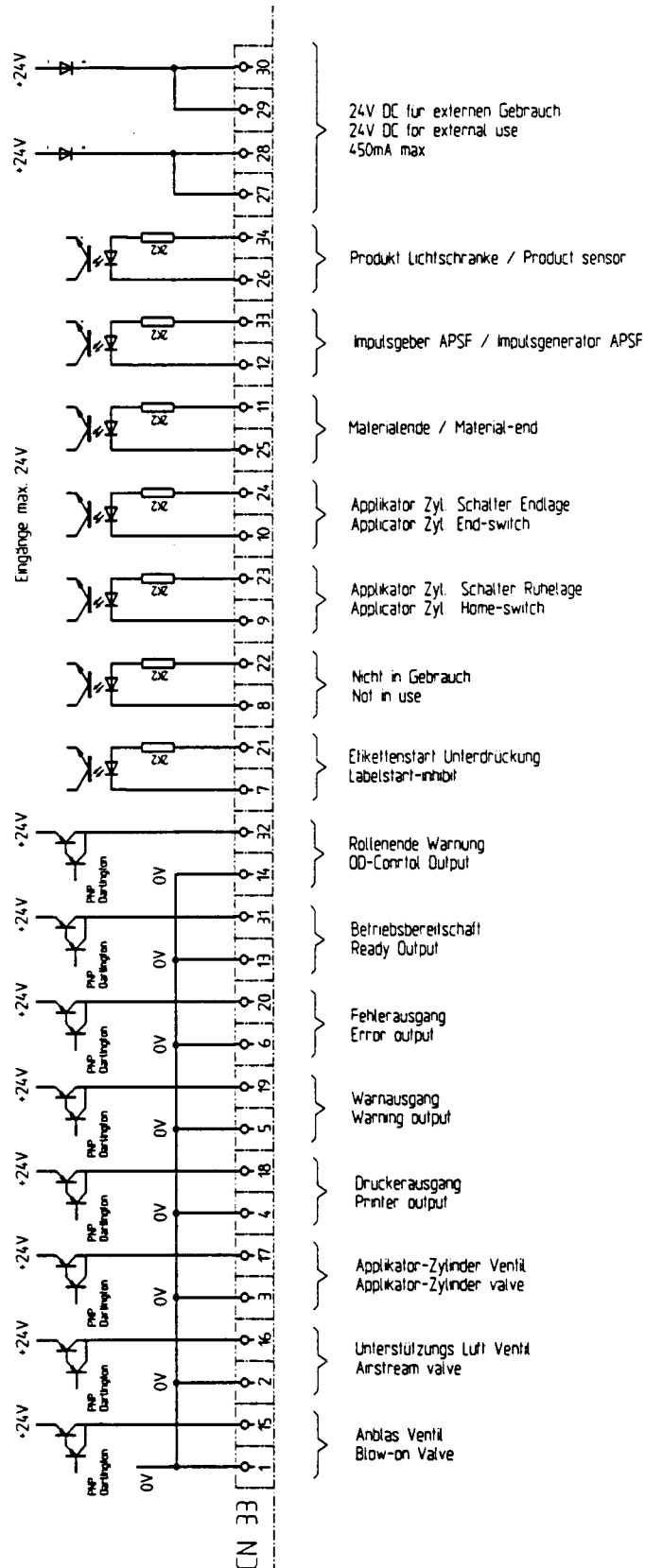


Figure 29 Internal I/O connector

8.4 EMI

To protect the machines against electrical noise and to protect production of electrical noise you have to follow this rules:

Rule 1

All metallic parts must have a good and plane contact (no lacquer, aluminium oxide is an isolator). Use scratch washers.

Rule 2

Signal lines (Data- , communication- and control cable) has to separated to power cables. The minimum distance is 50 cm (20 cm inside a cabinet).

Rule 3

All signal lines should be lead in the machine or cabinet only on one side.

Rule 4

Unshielded cables must be twisted (both poles).

Rule 5

On all inductive components (relays, valves) must be directly connected a clamp circuit (diode, MOV).

Rule 6

All signal lines must be shielded. The shield must have a good earth connection on both sides. For the connection use metallic clamps. Don't use a soldered wire for this connection.

In case of different earth potential on both cable sides install parallel a cable of at minimum 10 mm².

Rule 7

The shield of analogue cable (Video etc) should be shielded only on one side. Normally there is no such cable with labelling machines.

Rule 8

Line filter has to be mounted directly on the cable entry.

Rule 9

Cables should not fly in the air. Lead all cables nearby metallic, grounded parts. Ground unused cables and wires in a cable at minimum on one side, better on both.

Rule 10

Cables should not be longer as necessary.

8.5 Electronic diagrams

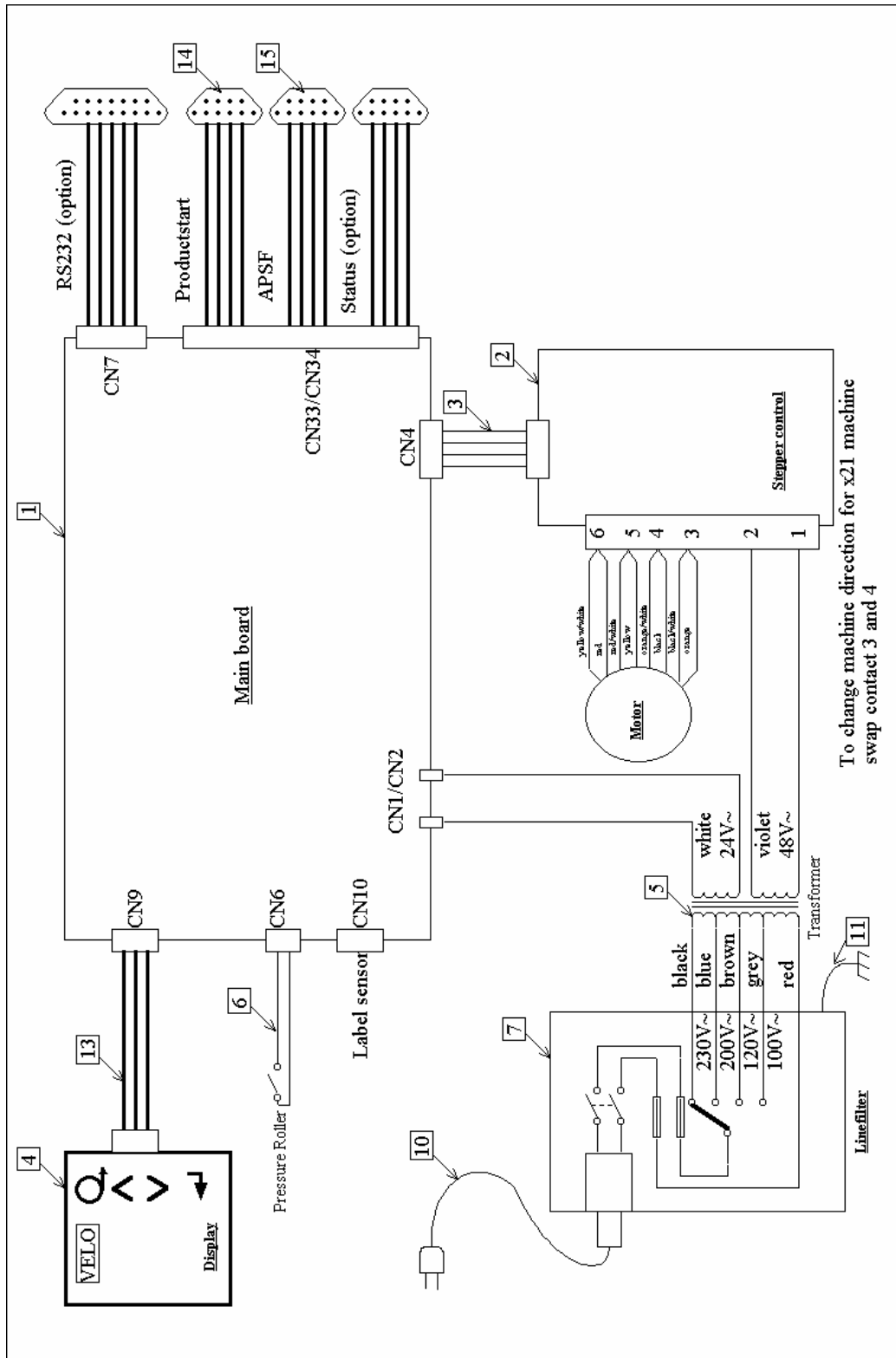


Figure 30 Wiring diagram

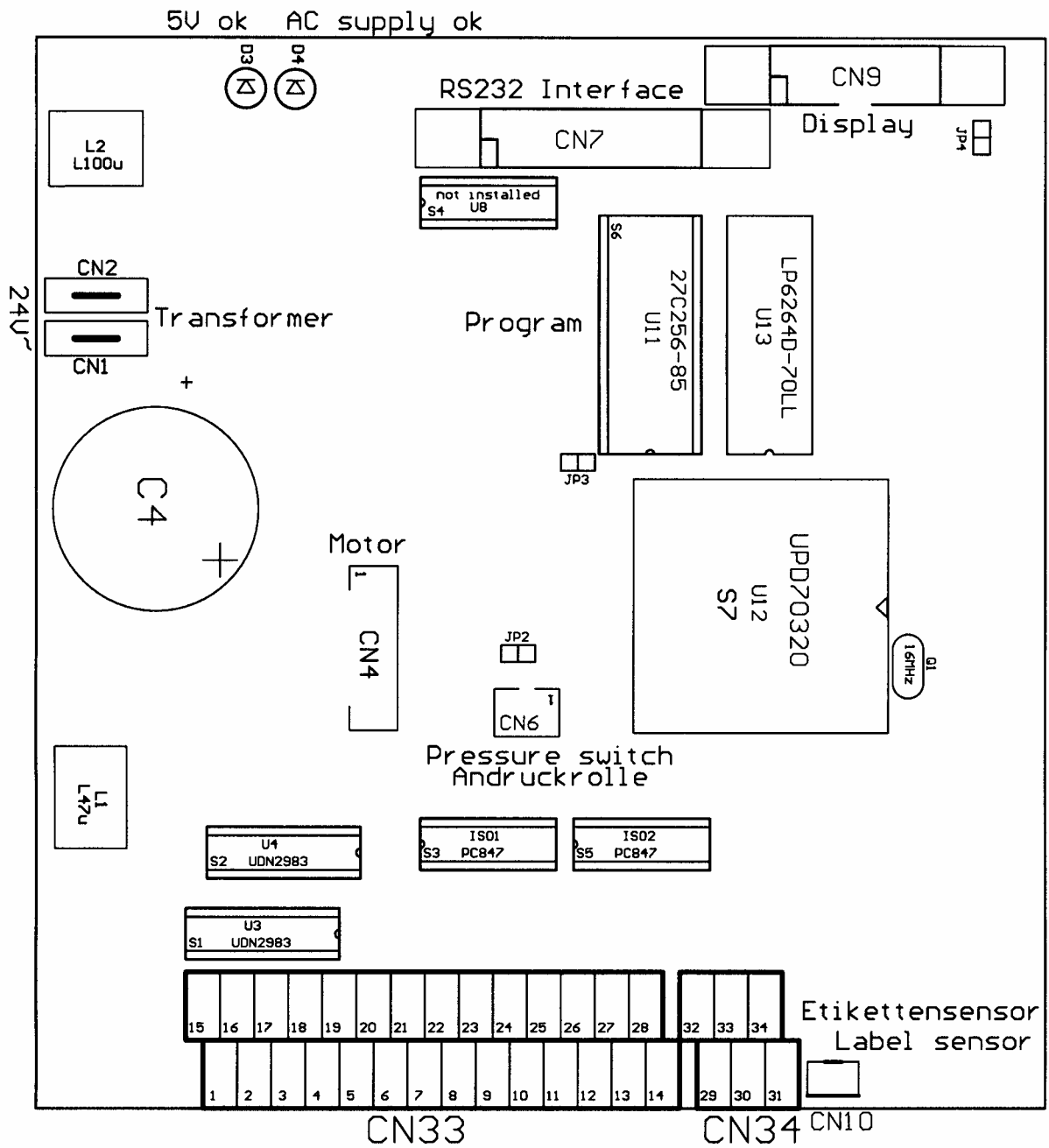


Figure 31 Layout dispenser electronic board

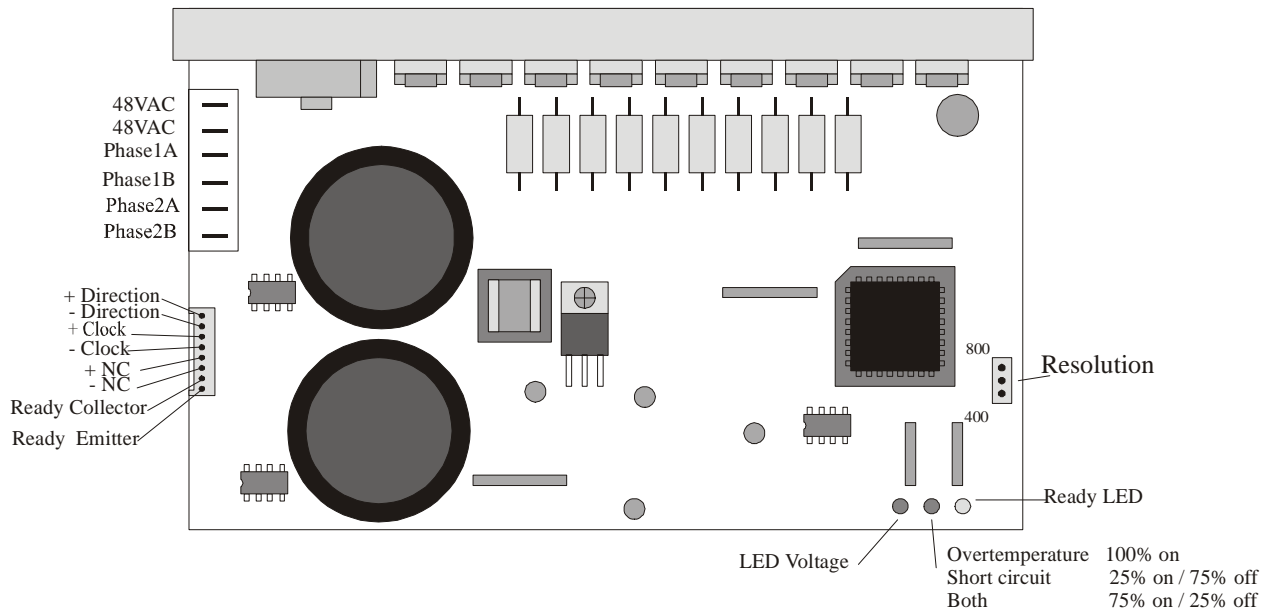


Figure 32 Layout stepper motor driver

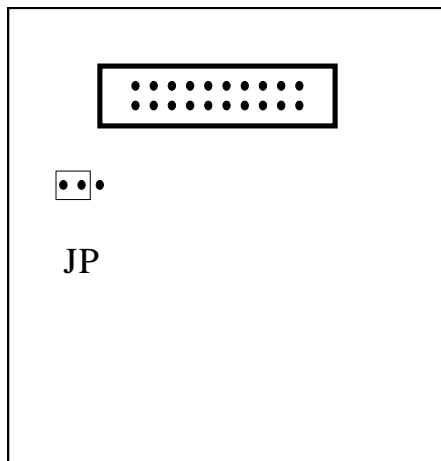


Figure 33 Display jumper setting

9. Errors and warnings

The software checks during the labelling permanently, if the machine runs under normal operation. If labelling is not possible, the display shows a message e.g. E__0.

If the labelling can be continued, but a problem has occurred or may occur, the display shows a warning e.g. W__1.

By pressing the key ENTER the message will be erased.

In case of an error or warning message the relevant output is switched. The signal can be used for interconnection with an external machine control.

Via the serial interface the errors and warnings can be called.

If an error cannot be erased, please call your local service technician.

9.1 Dispenser error messages

In case of an error message the relevant output is switched. The signal can be used for interconnection with an external machine control.

STO! Power-fail message

The message STO! appears in the display as the machine is switched off or if the mains supply voltage has fallen below specification.

The message STO! (store) indicates that the machine has stored some parameters internally as a power fail condition was detected. The error output is switched active and the ready output inactive simultaneously with STO! appearing in the display.

If the mains supply voltage only experiences a drop in level and then returns to a correct level then the ready output is restored to its previous condition but the message STO! will remain in the display to indicate that there has been a problem with the mains supply.

Message	Meaning	How to solve
E__0	Pressure roller is open	Close the pressure roll and make a new initialisation if necessary
E__1	During material transport no label is recognised over a length of 4 labels	Insert new material and check the label sensor
E__2	EP applicator not in HOME position	Check air supply. Applicator not connected. HOME switch not adjusted
E__3	Check sum of the configuration data is wrong. All Parameters are set to the factory adjustment.	Call the configuration menu and adjust all parameters again.
E__4	Check sum of the labelling data is wrong. Labelling Parameters are	All labelling parameter have to be adjusted again

Message	Meaning	How to solve
	set to the factory adjustment.	
E__5	10V supply voltage for label sensor low.	Short circuit in label sensor or cable. Voltage regulator U14 is damaged.
E__6	24V Voltage low	Short circuit on an output. Total load too high i.e. max is 3A for all outputs. Voltage regulator U1 is damaged. Change main board.
E__7	Material initialization failed	Check if the label web is threaded through the label sensor
E__8	Error stepper motor driver	The stepper motor control has detected an error. The fault is indicated by the LED's on the driver.
E__9	10V supply for label sensor too high	Voltage regulator U14 damaged
E__10	Missing label on product	One or several product could not be labelled. Distance between products too close. Increase speed of printer.
__0	Process error (Divide overflow)	Hardware failure external noise. EPROM damaged. Turn off power and on again. Change EPROM or main board
__1	Illegal interrupt (processing error)	Hardware failure external noise. EPROM damaged. Turn off power and on again. Change EPROM or main board
__2	Illegal bank interrupt (processing error)	Hardware failure external noise. EPROM damaged. Turn off power and on again. Change EPROM or main board
INTO	Illegal interrupt INTPO (processing error)	Hardware failure external noise. EPROM damaged. Turn off power and on again. Change EPROM or main board.

9.2 Dispenser warnings

In case of a warning message the relevant output is switched. The signal can be used for interconnection with an external machine control. Warning W__5 activates only the special OD warn output.

Message	Meaning	How to solve
W__0	New start signal from product sensor while ALX720 is dispensing a label Multiple signals from the same product Several missing labels on the web, which can not be compensated	Slow down conveyor speed or product sequence. Adjust higher labelling speed Increase the parameter value of PRDL product length
W__2	Error while writing in the EEPROM	EEPROM defect, Start machine again, if problem remains the same, exchange EEPROM as soon as possible
W__3	RS232 transfer error	Check interface parameter in the configuration menu and in the host
W__4	Conveyor speed exceeded the max. speed of the dispenser	Slow down conveyor. If average conveyor speed is OK then check for oscillation in the conveyor speed or vibration of the pulse generator
W__5	Material end by the OD control recognised	Insert a new material roll
W__6	Too many products between sensor and dispensing edge	Move the sensor closer to the dispensing edge

10. Technical specification

The following data are maximum values. Depending on label material, operation environment and labelling condition the real value could be lower.

10.1 Technical Information

Description	Details	
	330	430
Label width (incl. backing paper)	10 mm ... 100 mm	10 mm ... 230 mm
Label length	5 to 999 mm	
Diameter Label roll	max 300 mm	
Core diameter (of label roll)	1.5" (37 mm), or 3" (74 mm) <i>optional</i>	
Label roll unwind	dancer arm controlled unwind brake, for minimum change in web tension (Euro versions only)	
Dispensing speed	0.2- 25 m/min	0.2- 18 m/min
Material transport	0.1 mm per motor step	
APSF Automatic Product Speed Follower	optional Resolution: 0.1mm to 0.3 mm per pulse	
Label stop accuracy	+/- 0.5mm	
Labels per min rate	See performance charts	
Rewind	collapsible, i.e. can be used even for plastic backing material	
Dispensing edge	V-shape fixed; L - shape fixed (optional)	
Versions available	left and right hand	
Dimensions w * h * d	560 * 630 * 340 mm	560 * 630 * 410 mm
Weight	28 kg	35 kg
Display panel	4 Digit LED display, 4 Membrane keys	
Label sensor	infrared photo sensor	
CE- marked	Confirms all relevant actual European standards	
Protection class	IP 41, IP54 on request	

Description	Details	
	330	430
Operating environment	5 – 40°C, storage 0 – 70°C 30 - 80%, non condensing	
Power consumption	300 VA	
Mains voltage	100V~, 115V~, 200V~ and 230V~ 50/60Hz (6.3A for 110V else 3.15A), +5%- 10%	

10.1.1 Application specification

The labeller is designed and built for automatic applies of self-adhesive labels.

10.1.2 APSF- Sensor Specification (Optional function)

The resolution of the sensor should be selected in a way, that for 0.15mm product travel a sensor pulse will be generated. Using a different resolution gives loose in label accuracy or limits the highest dispensing speed.

It is possible to use one common sensor for several dispensers. In this case the sensor is supplied from one machine or the several supply voltages switched parallel are separated with diodes.

Supply voltage:	24 V DC
Output current:	20mA for each dispenser
Signal rise and fall time:	each 1µs
Max frequency:	20 kHz
Signal ratio:	1:1 +- 12,5 %
Connection:	Only shielded cable. The shield has to be grounded on both sides.

10.2 Performance charts

The following charts show the maximal theoretically labels per minute rate. Tolerances in product speed, label and product dimensions reduce the label rate. The charts are valid for direct dispensing (without applicator and printer). For critical applications, performance test should be done first. The charts are valid for software version V4.0.

10.2.1 Charts 330

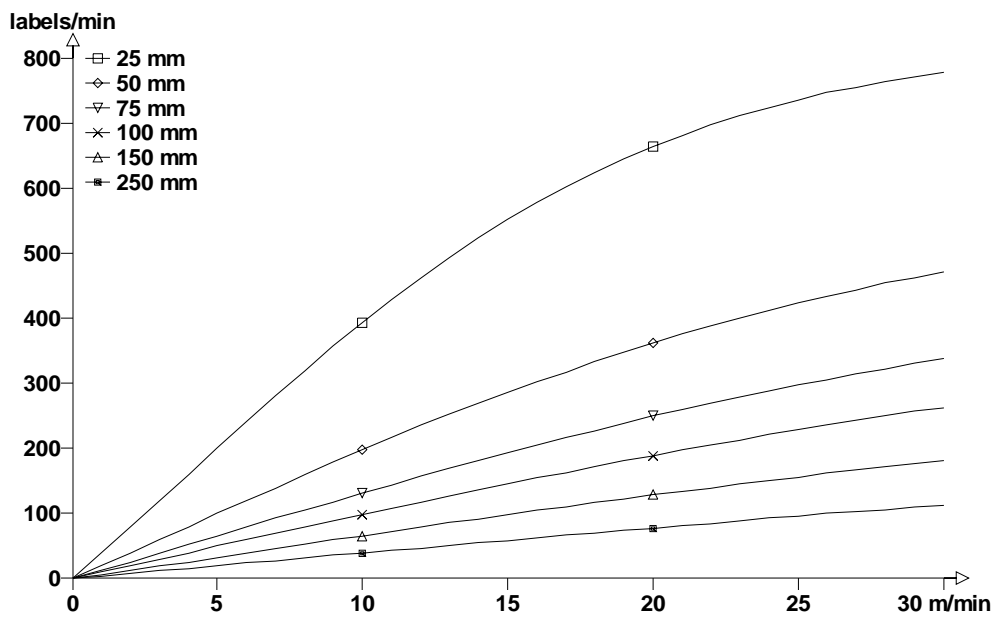


Figure 34 Performance chart: Ramp FAST

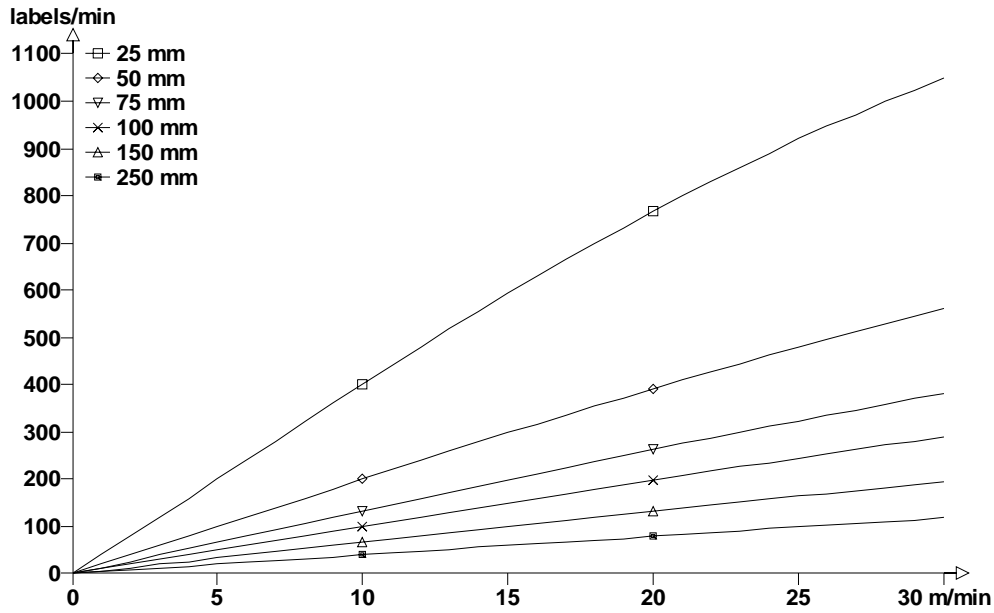


Figure 35 Performance chart: Ramp NORM

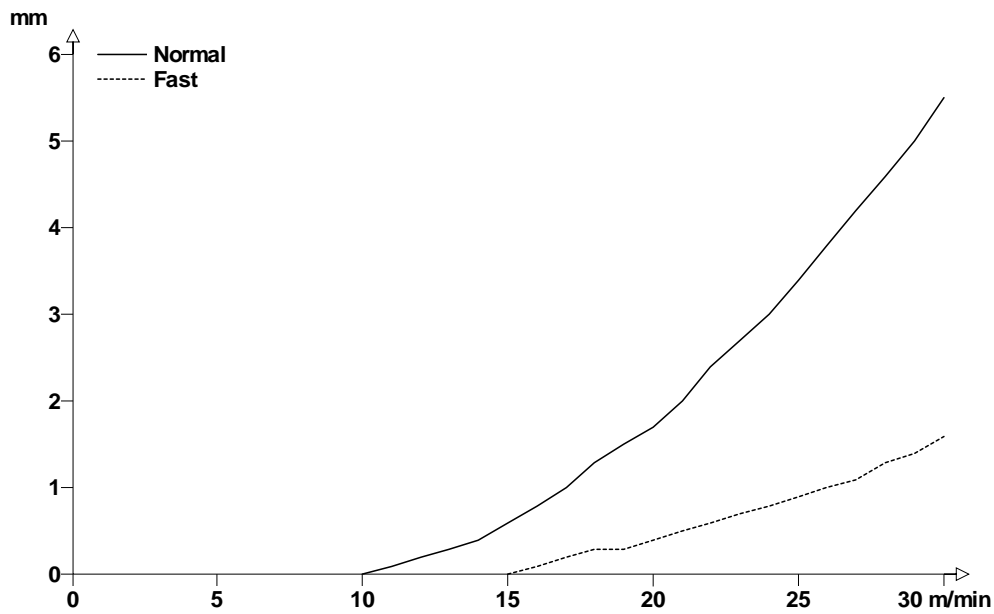


Figure 36 Acceleration

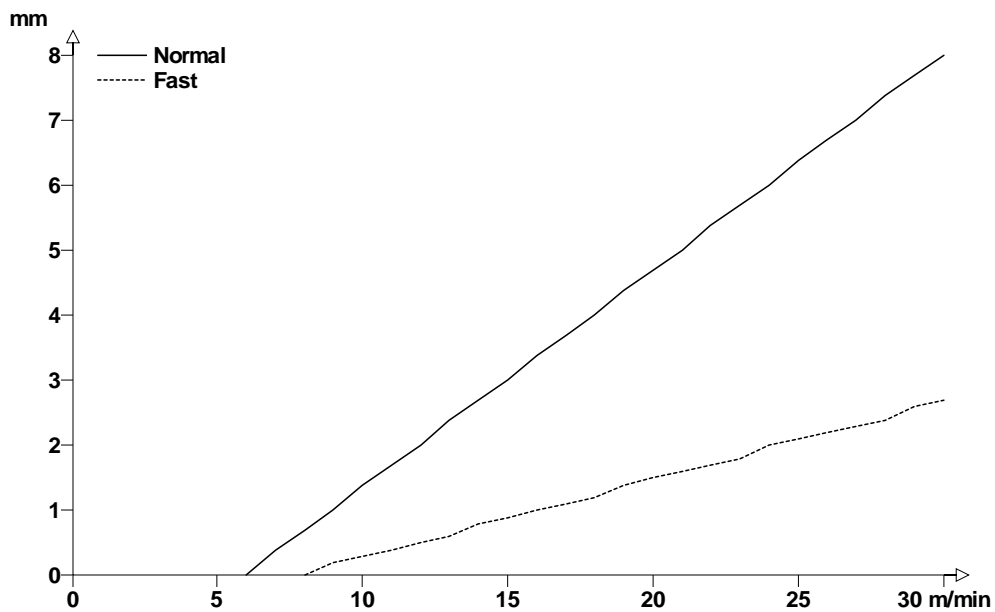


Figure 37 Deceleration

10.2.2 Charts 430

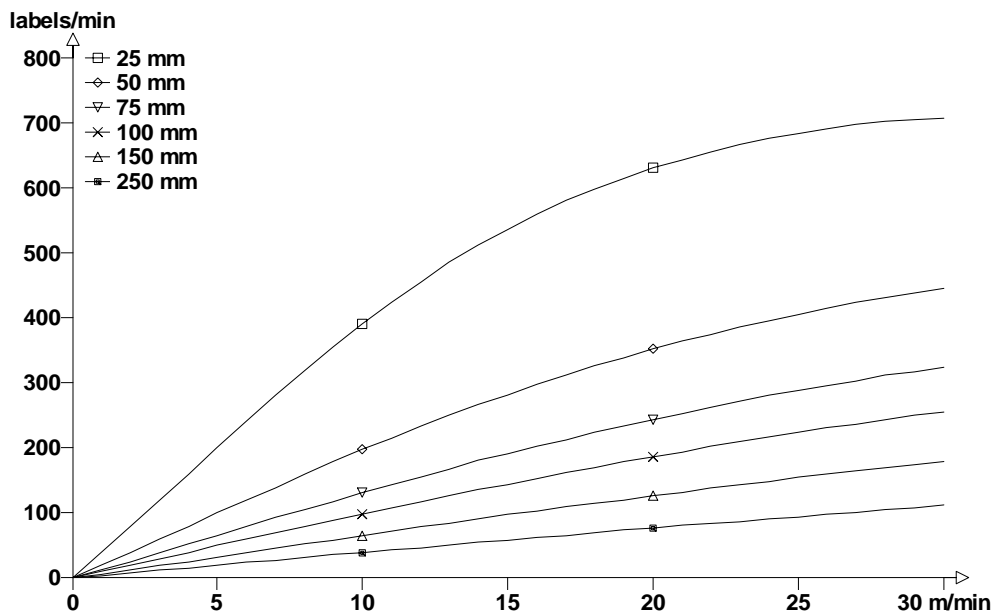


Figure 38 Performance chart: Ramp FAST

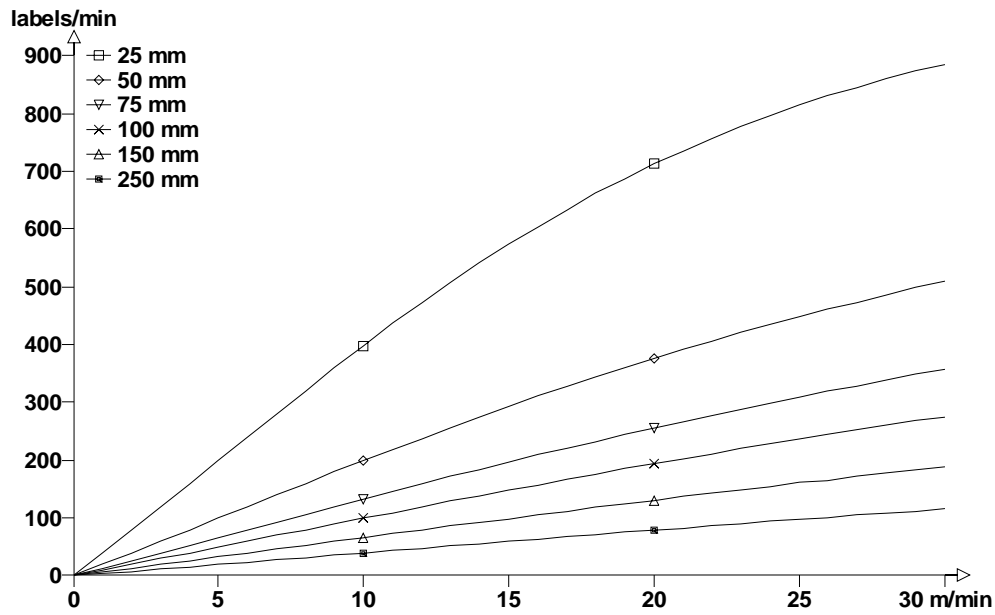


Figure 39 Performance chart: Ramp NORM

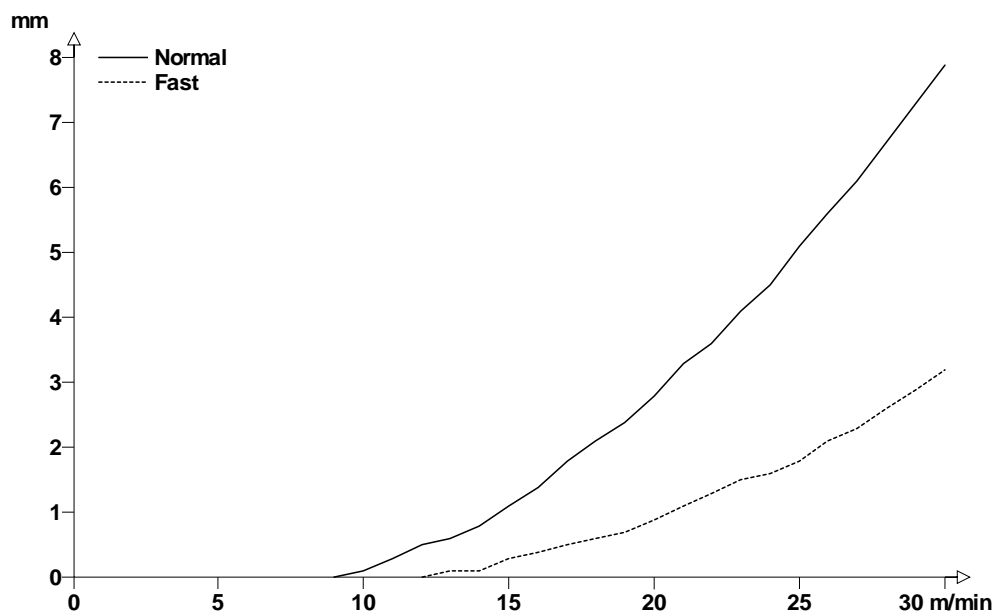


Figure 40 Acceleration

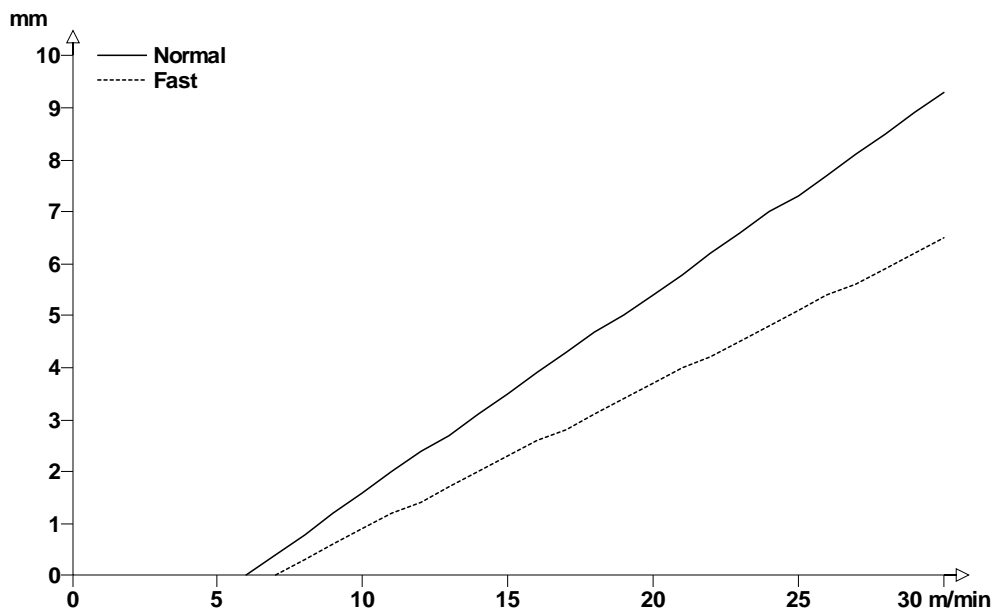


Figure 41 Deceleration

11. Adjustment

Function	Factory	Application
P_S_	LEDG	
MACH	230	
MDIR	←	
RAMP	FAST	
MLAB	WARN	
COMP	ON	
APSF	OFF	
APPL	DIR	
BAUD	NONE	
PARI	NO	
SBIT	2BIT	
DBIT	8BIT	
DIST	76.0 mm	
PHT	1	
SLEW	FAST	

Function	Factory	PD01	PD02	PD03	PD04
POS(STAD)	100.0 mm				
VELO	30.0 m/min				
STOD	76.0 mm				
BLOW(APT2)	1 ms				
LPIT	AUTO				
CONT	AUTO				
PRDL	AUTO				
EGRA	500				
APT1	200 ms				
APT3	0 ms				
APOS	0				
ASTP	0				
PDT	OFF				

Function	PD05	PD06	PD07	PD08	PD09
POS(STAD)					
VELO					
STOD					
BLOW(APT2)					
LPIT					
CONT					
PRDL					
EGRA					
APT1					
APT3					
APOS					
ASTP					
PDT					

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